REPORT ON FINANCIAL STABILITY

November 2012

MAGYAR NEMZETI BANK

Financial stability is a state in which the financial system, including key financial markets and financial institutions, is capable of withstanding economic shocks and can fulfil its key functions smoothly, i.e. intermediating financial resources, managing financial risks and processing payment transactions.

The Magyar Nemzeti Bank's fundamental interest and joint responsibility with other government institutions is to maintain and promote the stability of the domestic financial system. The role of the Magyar Nemzeti Bank in the maintenance of financial stability is defined by the Central Bank Act.

The Magyar Nemzeti Bank facilitates and strengthens financial stability using all the tools at its disposal and, should the need arise, manages the impact of shocks. As part of this activity, the Magyar Nemzeti Bank undertakes a regular and comprehensive analysis of the macroeconomic environment, the operation of the financial markets, domestic financial intermediaries and the financial infrastructure, reviewing risks which pose a threat to financial stability and identifying the components and trends which increase the vulnerability of the financial system.

The primary objective of the Report on Financial Stability is to inform stakeholders about the topical issues related to financial stability, and thereby raise the risk awareness of those concerned as well as maintain and strengthen confidence in the financial system. Accordingly, it is the Magyar Nemzeti Bank's intention to ensure the availability of the information needed for financial decisions, and thereby make a contribution to increasing the stability of the financial system as a whole.

The analyses in this *Report* were prepared by the Financial Stability, Financial Analysis, Monetary strategy and Economic Analysis as well as the Payments and Securities Settlements Directorates, under the general direction of Márton NAGY, Director. The project was managed by Tamás BALÁS, senior economist of Financial Stability. The Report was approved for publication by the Executive Board of the MNB.

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The *Report* incorporates the Monetary Council's valuable comments and suggestions following its meetings on 9 October and 30 October 2012. However, the *Report* reflects the views of the contributing organisational units and does not necessarily reflect those of the Monetary Council or the MNB.

This Report is based on information in the period to 10 October 2012.

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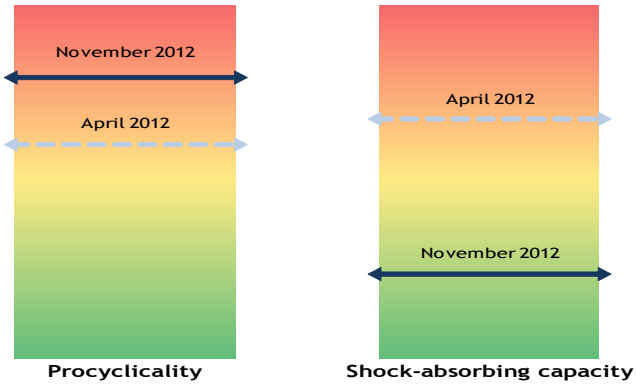
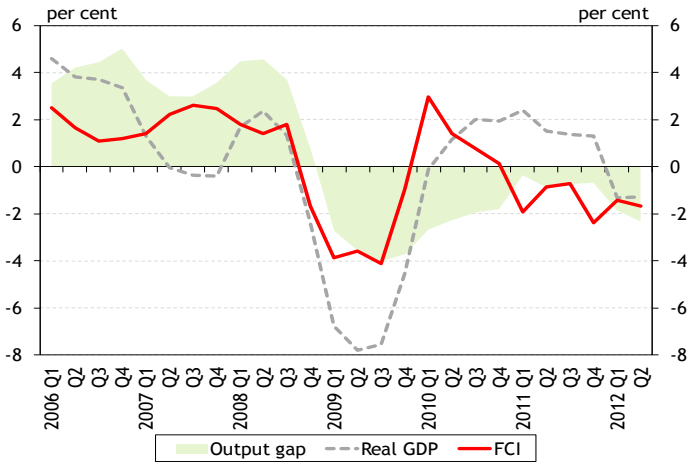
OVERALL ASSESSMENT

Financial stability heat map



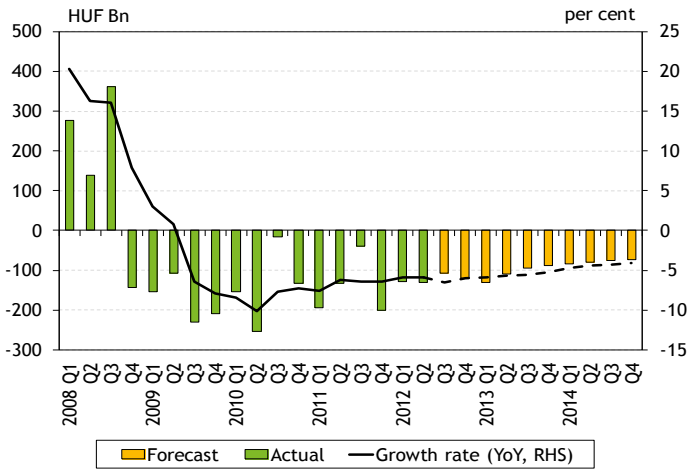
Note: Procyclicality is measured by the Financial Conditions Index (FCI), while resilience to shocks is approximated by the lowest value of three partial indicators (System-wide Financial Stress Index (SWFSI), Liquidity Stress Index (LSI), and Solvency Stress Index (CSI)). The methodological appendix contains a description of the index family.
Source: MNB.

Financial Conditions Index (FCI), real GDP and the output gap



Note: The annual increase in the FCI shows the contribution of the financial intermediary system (banking sector) to the annual growth rate of real GDP. If the sign of the FCI is identical to that of the output gap, then the banking sector behaves procyclically.
Source: MNB.

Forecast of quarterly net changes in lending to the corporate sector



Source: MNB.

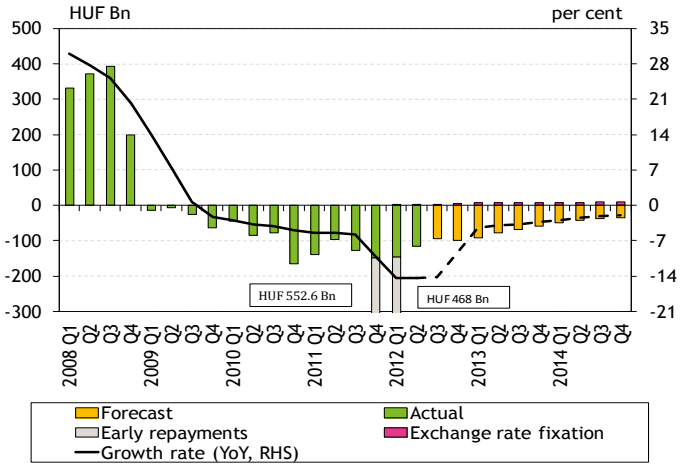
The financial intermediary system functions adequately if it is resilient to shocks and supports economic growth via lending. The resilience of the Hungarian financial system in terms of capital and liquidity is adequate, and has improved markedly since the last report. At the same time, the financial system is only performing its function as a financial intermediary to a very limited extent, as its low willingness to lend is having a strongly procyclical impact on corporate lending. Several risks have been identified in the external and domestic environment of the financial system, which are conserving this procyclicality and may weaken the current adequate level of resilience to shocks in the future.

Credit conditions

Mainly due to its subdued profitability, domestic banking sector is not supporting economic growth through lending. The current level of the Financial Conditions Index (FCI) suggests that the domestic banking sector is strongly procyclical. The FCI exhibits a highly negative value, while the output gap of the economy is also negative, implying that the financial system is contractionary, i.e. it exacerbates the economic downturn through the tight credit supply. This is mainly the consequence of weak banking sector profitability and the uncertain economic outlook.

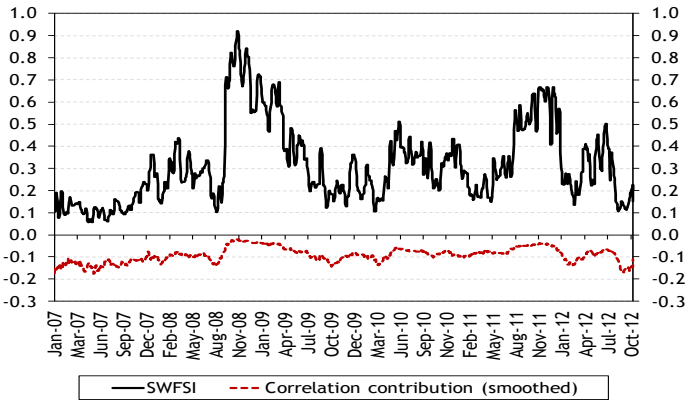
Tight credit conditions, particularly in the corporate segment, have led to a protracted period of subdued lending. According to the results of the latest Lending Survey, banks indicated further tightening due to lower willingness to lend rather than to deterioration in lending capacity (i.e. liquidity and capital position). In addition, subdued credit demand due to the drop in corporate investments and fading business sentiment point to further contraction in lending. Economic outlook has worsened as well, and thus the weakening cyclical position of the economy is leading to lower credit demand and consumption. Due to falling corporate profitability, loan portfolio quality is expected to deteriorate and risk costs to increase, which in turn may have an impact on pricing. Additional negative factors include the postponing of the reduction of bank levy and the raise of financial transaction tax. If the latter is directly passed on customers, it may lead to deterioration in corporate profitability; if it is passed on other services, it may lead to higher

Forecast of quarterly net changes in lending to the household sector



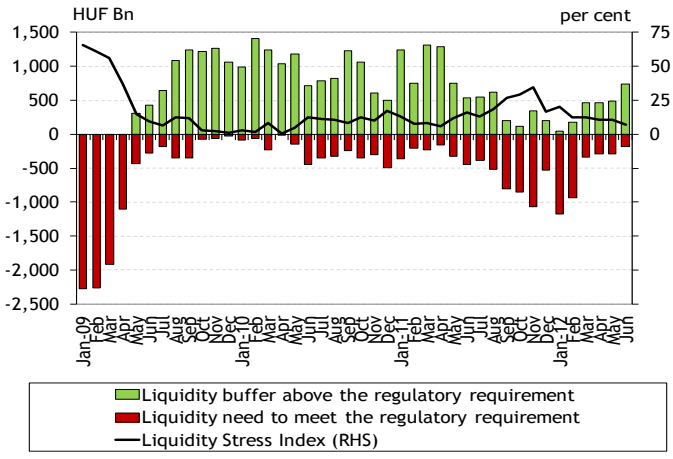
Source: MNB.

System-wide Financial Stress Index (SWFSI)



Note: The SWFSI covers the following sub-markets: spot foreign exchange market, capital market, secondary government securities market, interbank unsecured forint market, FX swap market, and the banking sector's stress index and correlation contribution. Higher levels denote higher stress. The correlation indicator of the SWFSI measures co-movements between markets.
Source: MNB.

Liquidity Stress Index, and banks' liquidity surplus or deficit relative to the regulatory level in the stress scenario



Note: The LSI is the sum of normalised liquidity deficits relative to the 10 per cent level, weighted by the balance sheet total. The higher the value of the index, the higher the liquidity risk in the stress scenario.
Source: MNB.

borrowing costs. These factors point to a further marked contraction in corporate lending over the forecast horizon. In our estimation, the two policy rate cuts in August and September, amounting 50 basis points, will probably only be able to offset these factors to a lesser extent. Consequently, corporate lending is unlikely to rebound till 2015. The persistently subdued corporate lending may lead to contraction in production capacity, which weighs on medium and long term potential growth.

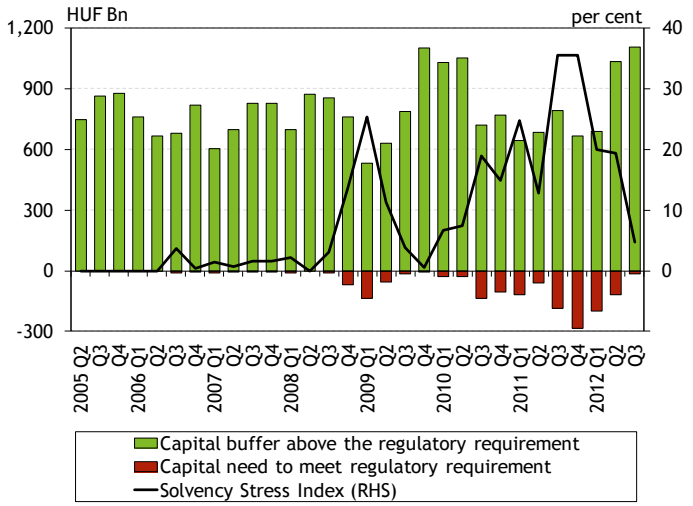
In contrast to corporate lending, household lending is prevailed by demand factors. Weak household credit demand is related to the uncertain income outlook and deleveraging of households. In the future, the role of credit supply factors may decline in the household market, mainly due to the fact that government-subsidised mortgage facilities have interest costs 4–5 percentage points lower than current market rates. This measure and the interest rate reductions by the central bank are expected to mostly offset the negative impact of weakening credit demand and high fiscal burdens on banks, thus our previous lending forecast has only been lowered to a small degree. The persistently subdued household lending is the result of the deleveraging of households stemming from the over-indebtedness, thus it is not considered adverse in terms of potential growth.

Resilience of the domestic financial system

There are no signs of turmoil on the key financial markets. For the purposes of financial stability, the government securities market, the spot foreign exchange, the FX swap and the interbank money market are considered as key markets. The backward-looking System-wide Financial Stress Index (SWFSI), aimed at gauging stresses on these markets, is near one of its lowest values in the past four years.

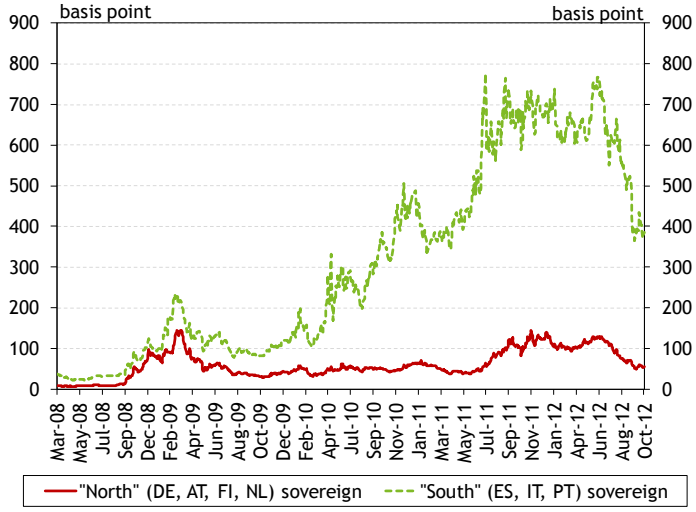
Banking sector liquidity also improved, parallel to financial markets liquidity. The banking sector has accumulated a substantial liquidity buffer, in order to comply with the short-term regulatory liquidity rule introduced in January 2012. The low level of the forward-looking Liquidity Stress Index (LSI), based on the short-term liquidity measure, implies that the liquidity buffer is adequate even in the occurrence of an extremely adverse shock. The longer-term structural liquidity position is also favourable. The majority of banks meet the 65 per cent regulatory requirement of the foreign exchange funding adequacy ratio (DMM) in effect since June 2012. Market participants complied with this requirement

Solvency Stress Index, and banks' liquidity surplus or deficit relative to the regulatory level in the stress scenario



Note: The indicator is the sum of normalised capital shortages relative to the 8 per cent level, weighted by the capital requirement. The higher the value of the index, the higher the solvency risk in the stress scenario.
Source: MNB.

Five-year CDS spreads in the euro area



Source: Thomson Reuters.

mainly by extending the average remaining maturity of external funds and FX swaps. At present, the dynamic outflow of external funds does not cause liquidity tensions as the appreciation of the forint, the decrease in FX swap exposure, and the longer maturities of external funding offset the negative effects.

Banks' capital position has improved further. The banking sector's overall capital adequacy ratio increased to almost 15 per cent at the end of June 2012, due to the contraction in lending, appreciation of the forint and massive capital injections by parent banks. The system-wide capital adequacy ratio is nearly double the 8 per cent regulatory minimum, but capital buffers are extremely concentrated and retained earnings capacity is distressed. At the same time, the forward-looking Solvency Stress Index (SSI), which also takes into account the higher tax burdens of banks and the increased loan loss coverage ratio for non-performing loans than the current level, shows a low value, suggesting that the capital position of banks, and, consequently, the entire banking sector is adequate.

Key risks

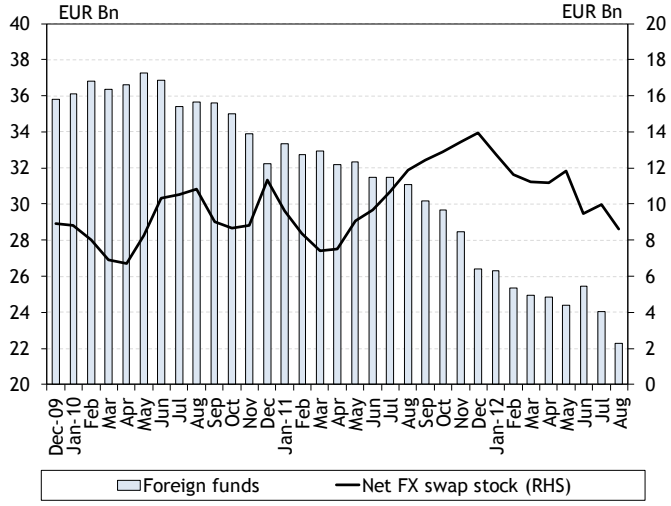
The protracted euro-area sovereign debt crisis remains a key risk, despite the improvement in investor sentiment. Important progress has been made towards resolving the euro-area sovereign debt crisis: (i) the German Federal Constitutional Court ratified the European Stability Mechanism and the European fiscal treaty; (ii) the ECB announced a new bond purchase programme and (iii) the establishment of a European banking union is underway. Along with the Fed's new bond purchase programme (QE3), these steps greatly contributed to an improvement in global investor sentiment. Nevertheless, the situation of the periphery countries in the euro area remains a cause for concern. Several periphery countries are compelled to introduce stricter fiscal austerity measures, while their banking systems need substantial capital injections. However, not only in the periphery, but also in some of the core countries, major consolidation measures will be implemented. This may result in a significant deterioration in the economic outlook in the euro area, which in turn would generate additional pressure on European banks' balance sheets and profits, while investor sentiment might remain volatile.

Annual changes in key domestic macroeconomic indicators

	Actual	Projection	
	2011	2012	2013
GDP	1.6	-1.4	0.7
Export	8.4	2.1	6.9
Gross fixed capital formation	-5.5	-5.9	0.0
Household real income	2.2	-4.0	-1.3
Household consumption expenditure	0.0	-1.0	-0.8

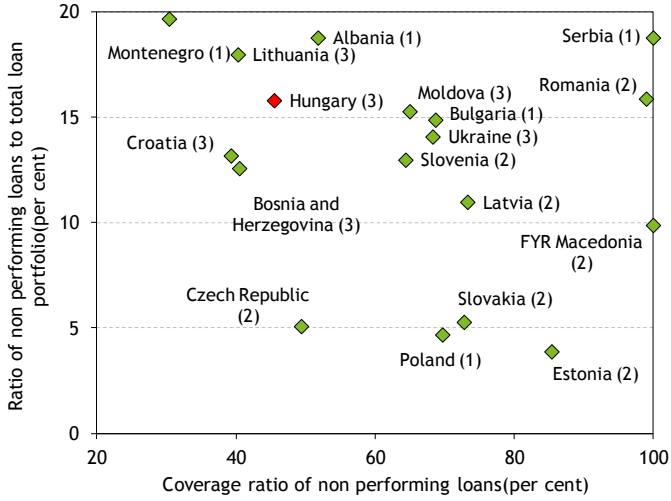
Source: MNB.

External funds and net FX swaps of the domestic banking sector and branches



Source: MNB.

Ratio of non-performing loans and their loan loss coverage in the wider region



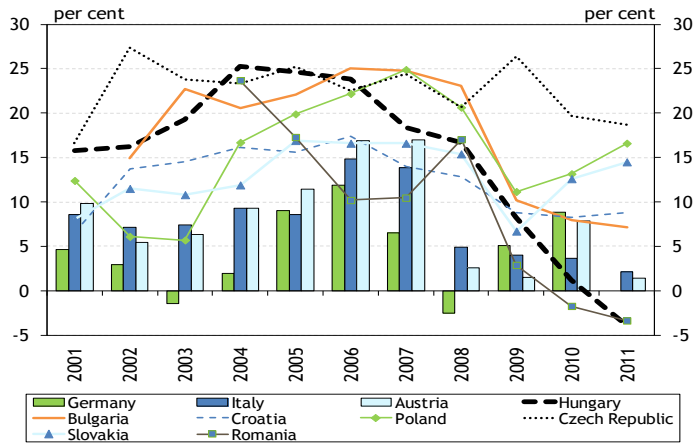
Note: Numbers in brackets denote the reference periods of NPLs: 1=2011 Q4, 2=2012 Q1, 3=2012 Q2. Data on loan loss coverage refer to 2012 Q2 in the case of Hungary and the latest data for 2011 in the case of other countries, based on the EBCI Report.
Sources: EBCI, IMF FSI, MNB.

The outlook for the Hungarian economy is also deteriorating. Exports will continue to be the main driving force of economic growth over the next two years, but this growth is likely to be more moderate than previously expected, due to the weakening global economic outlook. Domestic demand is likely to remain subdued, reflecting protracted balance sheet adjustment by households and tight credit supply to companies. These factors imply that the Hungarian banking sector will also continue to operate in a very weak economic environment in the coming years. Banking sector profitability remains low, due to the deterioration in portfolio quality and high tax burdens, resulting in lower willingness to lend predominantly to the corporate sector. That in turn is likely to worsen the economic outlook through feedback effects.

Outflows of external funds from the domestic banking sector continue at accelerated pace, while the reliance of the banking sector on the FX swap market remains high, despite some moderation was seen recently. Parent banks are characterized by twofold behaviour due to preservation of financial stability and deleveraging: while they are implementing recapitalisations (EUR 2.4 billion of injection since early 2009), they withdraw external funds to a larger extent from their subsidiaries (since early 2009, EUR 8 billion and EUR 14 billion outflow of parent bank and total external funds, respectively). The outflow of external funds continue at an accelerated pace, but due to the appreciating forint, decreasing FX swap exposure and the drop in CDS spreads, this has not led to liquidity tensions as opposed to end-2011. At the same time, the strong outflow of external funds, caused by the low willingness to lend of parent banks to their subsidiaries, may contribute to the deleveraging of the domestic banking sector.

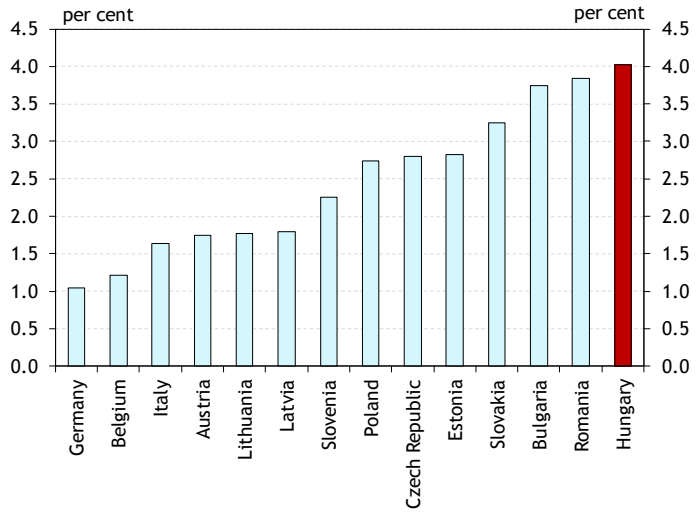
The ratio of non-performing loans is high in the domestic banking sector and the risk of insufficient loan loss coverage is rising. The high ratio of non-performing loans does not pose a risk in all cases. The question is to what extent loan loss reserves cover expected losses. The higher the NPL ratio, the higher the required loan loss coverage, as a flood of collateral sales would induce fire sales. In Hungary, loan loss coverage remains low compared to that of other peer countries in the region. That is attributable to insufficient coverage for loans to the corporate sector, particularly for non-performing project financing loans. In the household sector, loan

Banking sector ROE in international comparison



Note: Based on IMF GFSR data, calculated from consolidated after-tax profits.
Source: IMF and MNB.

Net interest income as a percentage of the balance sheet total in selected banking systems at the end of 2011



Source: ECB CBD database.

loss coverage for restructured mortgage loans is considered also low, but the gap appears to be small.

The profitability of the Hungarian baking sector is distressed, representing a competitive disadvantage in the regional allocation of funds. The extremely low profitability this year reflects the bank levy and large one-off losses, in addition to the persistently high loan loss provisioning. At the same time, the interest rate margin of the domestic banking sector is relatively high in international comparison, implying that if costs decrease the Hungarian banking sector may regain its competitiveness in the region over the medium term. Looking ahead, two negative factors emerged in terms of profitability: first, the bank levy will not be halved in 2013, while the financial transaction tax rate will be doubled. Second, the risk of additional loan loss provisioning needs on outstanding loans is elevated. As a result, compared to our previous expectations the improvement in profitability will be delayed from 2013, with negative effects on lending and the real economy.

At present, banks are attempting to partially offset rising loan losses by increasing interest rate margins, this, however, is not a sustainable over the longer term. In a regional comparison, the interest margin of the Hungarian banking sector is the highest. Rising interest rate margins imply higher debt servicing burdens for non-defaulted bank customers, which feeds back into the deteriorating portfolio quality and impairs consumption and economic growth. That may lead to the development of a negative spiral: the deteriorating portfolio quality and rising interest rates margins to offset them may reinforce each other, which deemed to be unsustainable over longer term.

Key risks:	Risk mitigation measures:
1. The protracted euro-area sovereign debt crisis continues to pose significant risks, despite the improvement in investor sentiment.	**1. Improving risk assessment of Hungary**. In order to mitigate the impact of shocks from the euro area, improving Hungary's risk assessment remains crucial; to achieve this, prudent and sustainable fiscal policy and concluding an agreement with the EU/IMF is needed.
2. Strong outflows of external funds from the domestic banking sector, while the reliance of banks on the swap market remains high, despite some recent moderation.	**2.1. Avoiding excessive outflow of external funds.** Excessive outflow of external funds could be avoided by commitment of foreign parent banks related to the EU/IMF agreement, where they pledge to decelerate contraction in funding of subsidiaries . **2.3. Mitigating risks stemming from large FX swap exposure.** A voluntary commitment of banks initiated by the central bank would aim at capping banks' off-balance sheet open position at 15 per cent of total assets.
3. The ratio of non-performing loans in the domestic financial sector is high, and there is increasing risk of insufficient loan loss coverage particularly in the case of project finance and restructured mortgage loans.	**3.1. Improving efficiency of liquidation procedures**. The legislation and technical factors impeding efficient portfolio management should be reviewed with regulators, supervisory authorities and financial sector participants, with particular regard to the existing liquidation rules. **3.2. Tightening of provisioning and collateral valuation rules.** Stricter provisioning rules and collateral valuation should be considered, to ensure prudent provisioning. This may result in two responses by banks: they will either set aside higher provisions for non-performing loans or accelerate portfolio cleaning. Both responses would help to mitigate risks. **3.3. The risk of insufficient loan loss coverage could be mitigated with a higher level of capital.** Banks are able to manage this problem not only by additional provisioning, but also by higher level of capital. Currently, banks appear to choose the latter approach.
4. Given the deteriorating portfolio quality and high tax burdens, banks' profitability and retained earnings capacity may remain subdued, and in conjunction with higher risk aversion due to the worsening economic outlook this may translate into persistent constraints on credit supply.	**4.1 Improving work-out efficiency.** Increase the efficiency of managing non-performing loans. **4.2 Enhancing predictability of the regulatory environment.** Crucial fundamentals for a turnaround in lending include reducing domestic banks' tax burden and ensuring predictable regulatory environment. **4.3 Expansion of guarantee programs.** Over the short term, it is necessary to expand the capacity of active guarantee institutions, in order to alleviate the procyclical behaviour of banks. This would allow for greater risk-sharing between banks and the state, making it the most efficient way of boosting corporate lending. **4.4 Recourse to MNB's lending tender.** Significant easing of the terms on the MNB's tenders for two-year loans to support bank lending may be helpful.
5. Banks are attempting to offset rising losses by raising interest rate margins, which is not sustainable over the longer term.	**5. Boosting price competition.** Transparent pricing regulations on outstanding mortgage loans should be extended up to their maturities. That would mitigate the risk of negative spiral between the interest rate margin and portfolio deterioration by promoting more intensive price competition among banks.

1. INTERNATIONAL AND DOMESTIC MACROECONOMIC AND MARKET ENVIRONMENTS – Implementation of euro area crisis management steps is sluggish, while the domestic economic outlook is deteriorating

Efficient management of the sovereign debt crisis and banking sector problems is a key task for euro area states. As part of this crisis management, the establishment of a European banking union was announced, while the last obstacle to the launch of the European Stability Mechanism (ESM) was also overcome. The ECB announced the start of unlimited government securities purchases in the secondary markets under certain conditions. As a result of all the above, market tensions eased considerably, which was also attributable to the announcement of the new quantitative easing of the Fed. However, risks in the euro area remain elevated; due partly to the feasibility of the timely and complete implementation of crisis management measures and partly to the challenges faced by southern countries to revive economic growth and to put government debt on a sustainable path.

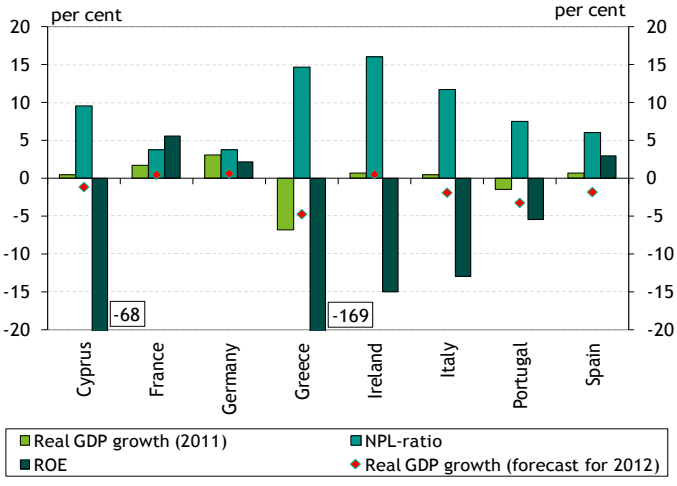
As a result of the improving global investment sentiment, the Hungarian risk premium dropped, and the liquidity of domestic financial markets improved. However, due to the euro-area sovereign debt crisis, the high net external debt of Hungary and the impaired potential growth, investors' risk perception of the country remains extremely volatile. In addition to uncertain financial conditions, the weak performance of the economy and the worsening of prospects also pose challenges to the Hungarian financial system. In our view, an early agreement with the EU/IMF would contribute to a great extent to the mitigation of the vulnerability to external shocks.

Table 1: Comparison of the financial and economic indicators of the 'North' and the 'South' (2008-2011, average)

	"North" (DE, AT, NL, FI)	"South" (GR, ES, PT, IT)
Growth problems		
Real GDP growth (YoY)	0.3	-1.5
Stock problem		
Net financial assets*	-20	85
Gross government debt*	63	99
Flow problems		
Fiscal deficit*	-2.3	-7.7
Current account*	4.0	-6.7
CDS spread**	103	656

Notes: *As a percentage of GDP. **Basis points, average between July 2011 and July 2012.
Sources: Eurostat, Bloomberg.

Chart 1: Annual change in GDP, the ratio of non-performing loans and the ROE indicator at end-2011



Sources: IMF, ECB.

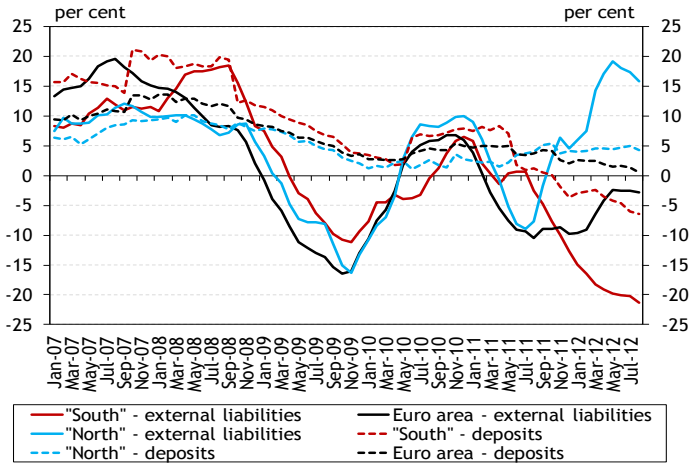
Implementation of measures to contain the euro-area sovereign debt crisis is slow

The global macroeconomic and financial environment continues to be dominated by tensions from the euro-area sovereign debt crisis. The improvement in market sentiment attributable to the liquidity expansion by the European Central Bank (ECB) in early 2012 proved to be temporary. In the spring, in the case of Greece the perils of exit from the euro area and the suspension of lending by international organisations became palpable, and then in May Spain requested financial aid for the recapitalisation of its banking sector (including primarily cooperatives).

Within the euro area, the divergence between the core and the periphery is increasing. The economic outlook for ('southern') countries struggling with debt and balance of payments problems is deteriorating, while their funding positions are worsening (Table 1), making fiscal consolidation extremely difficult and affecting their banking sector more severely. A negative spiral between the state, the banking system and the real economy is becoming a real risk. Due to their banking sectors' considerable exposures in the southern countries, the creditor ('northern') countries, with good economic fundamentals and extremely low financing costs, are also affected by these problems.

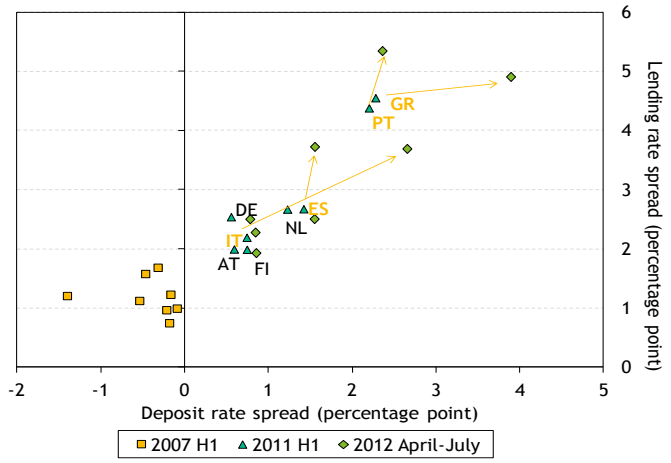
There are mounting problems on both the asset and liability sides of the banking systems of southern

Chart 2: Annual changes in euro area external funds (other than euro area) of banking systems and in the deposits of the private sector



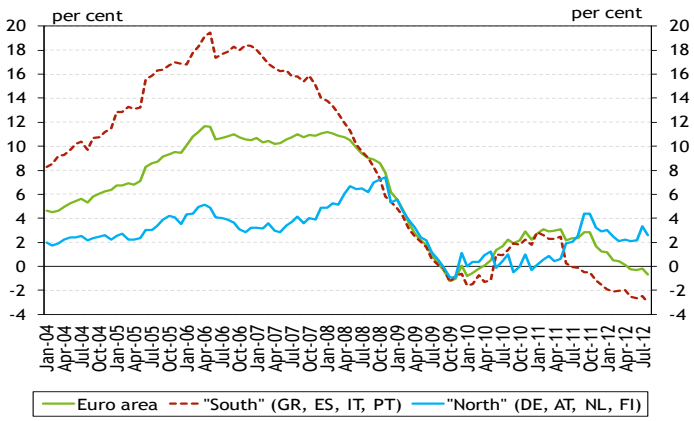
Note: 'North': DE, AT, NL, FI. 'South': GR, ES, IT, PT.
Source: ECB.

Chart 3: Average interest rate spreads (above EURIBOR)



Note: Arithmetic average of corporate loans (below and above EUR 1 million) and housing loans with maturities over and up to one year.
Source: ECB.

Chart 4: Annual changes in outstanding private sector loans



Source: ECB.

Member States. Due to the gloomier economic outlook, deteriorating portfolio quality is an increasingly severe problem, which – coupled with high funding costs – mainly impairs bank profitability in the periphery countries that are in a recession (Chart 1). Market funding is even more difficult by continued downgrading; Spanish and Italian government securities have moved dangerously close to the non-investment grade category, into which Portugal and Cyprus were already classified earlier (Greece is in the extreme speculative category). In addition to the costs, there are quantitative problems as well. Last year, external funding plummeted at a faster rate (by some 20 per cent) in the southern Member States, while it surged higher in the northern countries, due to flight to quality. In view of the deteriorating ability to save and the rising distrust in banks, collecting deposits is also a significant challenge (Chart 2).

The problems of periphery countries are exacerbated by banks' restrained credit supply. Interest rate spreads on loans and deposits[1] increased to record heights in 2012 Q2 (Chart 3), while non-price credit conditions also tightened. The decline in the high reliance on market funding, the still high funding costs, the stricter regulatory environment and limited internal capital accumulation all point to restrained lending. The accelerating decline in loans outstanding in the states hit by the debt crisis resulted in a decrease in loans outstanding in the euro area as a whole (Chart 4).

In order to manage the escalating sovereign debt crisis and banking problems, EU Member States took steps in the direction of closer integration. Following the approval by the German Constitutional Court, the last obstacle to launching the European Stability Mechanism (ESM) was also overcome. This fund will have a lending capacity of EUR 500 billion[2] (capital amounting to EUR 80 billion and EUR 420 billion of market funds with Member State guarantee). A part of the closer integration is the banking union taking shape (Box 1), in which the ECB would supervise the banking sector, with common bank resolution plans and deposit insurance in place. When the banking supervision is set up, direct recapitalisation of the banking sector of a given Member State will become possible.

[1] A pass-through into deposits would be favourable for the profitability of banks, but increasing reliance on deposits results in strengthening competition, while inflation is above 2 per cent.
[2] An IMF credit line of a similar magnitude will also be added to the ESM funds, although half of that would also come from European countries.

BOX 1: SOME PRINCIPLES IN RELATION TO THE BANKING UNION

Although the proposals for the Banking Union of the European Commission published on 12 September 2012 aim primarily at overcoming the current crisis of the euro area, they fundamentally affect the Hungarian banking sector as well.[3] According to the ideas, the first step in setting up the Banking Union would be the creation of the so-called Single Supervisory Mechanism (SSM), in which the ECB would gradually take over the supervisory powers over all euro-area banks from 2013.[4] The Bank Union may become complete in the coming years if (i) the Single Rulebook is adopted, and over the medium term with the setting up of (ii) a common, European resolution authority (which would be responsible for the orderly winding up of insolvent banks), (ii) a resolution fund that covers the costs of resolution and is financed from payments by banks and (iii) a common deposit insurance fund.

Pursuant to the proposal, Hungary as a non-euro area Member State would initially not be a part of the Single Supervisory Mechanism, although many Hungarian banks would still be involved. Hungarian branches of euro-area banks[5] would be supervised by the ECB, whereas subsidiaries would be supervised by the HFSA and the ECB, within the framework of the group-level (so-called consolidated) supervision. The most important effect will be reflected in the international supervisory cooperation; while up to now the supervision of a larger banking group may have been the common 'work' of even more than twenty European authorities, in the future only the ECB and the authorities of the 'outsider' countries will be involved in the supervision.

Although by itself it already means that international supervisory activity may be more efficient and smooth, the most important changes may be the aforementioned future elements of the Banking Union related to resolution and deposit insurance. Namely, pursuant to these, the burdens of any possible bank crises could be covered together, from the payments of the banking sectors of all participating countries, and the deposits would also be under common protection providing equal security.

It is important that, within the framework of the so-called close cooperation, Hungary also may transfer the supervisory competence over banks headquartered in Hungary to the ECB, in case it undertakes by law to provide the ECB with the bank data and information necessary for supervision and also that the national supervisory authority (the HFSA in the case of Hungary) will follow the decisions and guidelines of the ECB. This accession, however, would only affect supervisory powers, i.e. if Hungary entered into close cooperation with the ECB, the European Stability Mechanism (ESM)[6] would still not be available for the recapitalisation of Hungarian banks (as Hungary has not paid any contribution to the ESM), as opposed to euro-area banks.

It is the competence of the Hungarian government to decide to initiate close cooperation with the ECB.[7] However, at present even the negotiations about the draft of the EU regulation serving as the basis for the decision are still under way. Therefore, from a Hungarian point of view only general principles can be drawn up in advance. In any case, the framework desirable for Hungary needs to be assessed both for the scenarios of joining the SSM and staying out of it.

Need for a balance of rights and obligations. The delegation of supervisory licences to European level would increase the credulity of the Hungarian financial system resulting in decreasing finding cost. It would also mean that domestic authorities would have less influence and control over the Hungarian financial system and, moreover, fewer means to control or manage any turbulences or crises. This may be offset if Hungary is also able to adequately influence the activity of the common supervision (for example, by participating in the decision-making or if certain supervisory competencies may remain at local level).

[3] The decisions of the European Council on 28–29 June 2012 and of the heads of state or government of the euro area on 29 June called upon the European Commission to elaborate a 'road map' necessary for attaining a real Economic and Monetary Union. The pillars of this road map are: (i) the Banking Union (an integrated financial framework), (ii) an integrated fiscal framework, (iii) an integrated economic policy framework; and (iv) the strengthening of democratic legitimacy and accountability.

[4] Although the national supervisory authorities of euro-area Member States would keep certain competencies and the ECB would also involve them in the discharge of certain tasks, the ECB would practically perform all the important supervisory activities (regulation and control of capital requirement, certain macroprudential instruments, licensing, sanctioning, etc.).

[5] Several important banking groups, including, inter alia, Axa, BNP Paribas, Citi and ING, are present in Hungary with branch offices.

[6] The ESM is the permanent crisis management fund of the euro area. It may extend loans to its members, may purchase government bonds in the primary and secondary markets, may provide loans for recapitalisation of banks and it will also be allowed to recapitalise banks directly in certain cases.

[7] Obviously, with the adoption of the euro, Hungary would automatically enter the supervisory system of the ECB.

Keeping macroprudential policy at national level. According to the proposal, the ECB would be assigned not only the microprudential supervision of the banks concerned, but would also receive the powers related to the most important macroprudential instruments concerning these institutions (for example the counter-cyclical capital buffer). Although the principle that the Commission considers the euro area as one economic unit is understandable, exactly the current crisis made it obvious that in the present situation there may be considerable macroeconomic and financial differences even within the monetary union, and, for lack of independent monetary policy, only individual macroprudential instruments at the country level may be applicable to address local risks and imbalances. Obviously, this holds true even more for the countries that have not adopted the euro, such as Hungary, since these countries are at a lower stage of integration, and for them the maintenance of the powers of independent macroprudential intervention would be necessary even after establishing close cooperation with the Banking Union.

Transparent and reasonable conditions of cooperation. If participation in the Banking Union becomes possible irrespective of the introduction of the euro, a further criterion is that the conditions and the process of joining should be unambiguous and clear. The draft of the Commission regarding the SSM is appropriate in this respect; the advantages and disadvantages of transferring the supervision can be assessed. At the same time, the conditions of joining the 'complete' Banking Union – that comprises both crisis management rights and obligations – are not known yet.

Ensuring a level playing field, minimisation of market distortions. The objective of the Banking Union is to strengthen the stability of the euro area and the European banking system. As such, it may make the participating banks safer if it works well, which, of course, may be a market advantage in the money markets and in the collection of deposits. Although greater stability and increasing competition by themselves are positive, all this may result in negative changes as well for the participants of the Single Market that are left out causing competitive disadvantage for them. Therefore, it will be important to create a regulation that will not jeopardise the achievements of the Single Market reached to date. The countries that opt out for a shorter or longer period of time have to continuously monitor whether a level playing field remains ensured, and if possible and necessary, they have to take adequate steps to prevent unfavourable structural consequences.

Table 2: Securities purchase programmes of the ECB and the Fed

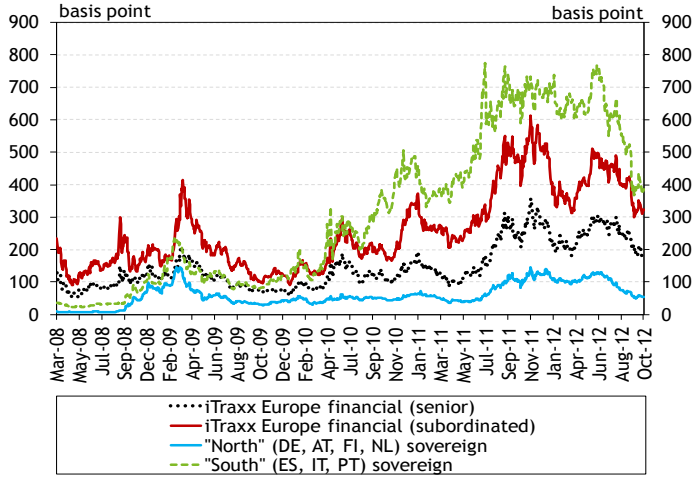
		Total amount Bn EUR	Period	Note
ECB	Government securities purchase programme (SMP)	209	05/2010-09/2012	On secondary market (no liqudity increase)
	1. covered bond purchase programme	60	07/2009-07/2010	Held-to-maturity securities, on primary and secondary marktes. Planned duration 1 year
	2. covered bond purchase programme	16	11/2011-09/2012	On primary and secondary markets
	Government securities purchase (Outright Monetary Transactions)	-	09/2012 - open-ended	Unlimited purchase on secondary markets, conditioned on ESM loan
Fed	QE1 - GSE mortgage-backed securities (MBS) and gov. securities purchase	1 223	09/2009-03/2010	From which gov. securities amounted to USD 300 bn. MBS principal repayments are reinvested till the end of 2012
	QE2 - gov. Securities purchase	432	11/2010 - 06/2011	
	"Operation twist"	290	09/2011 - 12/2012	Switching from short term to long term securities in the Fed balance-sheet
	QE3- MBS purchase	-	09/2012 - open-ended	Monthly USD 40 billion purchase, Open-ended

Note: At average EUR/USD exchange rate during the given programme.
Sources: ECB, Fed.

In managing the debt crisis, the ECB announced an unlimited government bond purchase programme. Following the liquidity injections at end-2011 and early 2012, including the 50 basis point policy rate cut and the three-year LTRO loans amounting to nearly EUR 1,000 billion, the ECB was less active (Table 2). However, it became more active again in July, and reduced the base rate by 25 basis points. As a result, it does not pay any interest on its overnight deposit facility.[8] In addition, the ECB announced that for certain individual countries above a certain yield level it was contemplating to begin unlimited bond purchases in the secondary markets (outright monetary transactions – OMT), provided that the given Member State receives assistance in accordance with the fiscal consolidation conditions required by the ESM and access to market funding is continuous. Thus, it can provide a considerable amount of additional funds to countries that entered the ESM and have limited capacities.

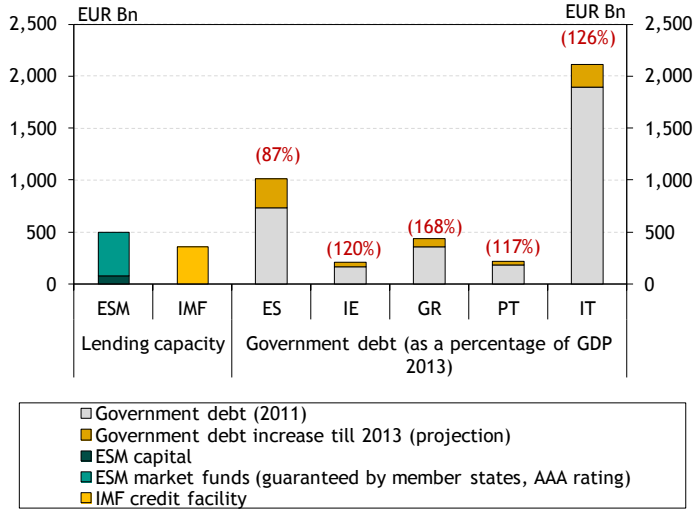
[8] Due to the ailing interbank markets, however, banks that have surpluses continue to place liquidity with the ECB, whereas banks that need liquidity also resort to the central bank.

Chart 5: Five-year CDS spreads



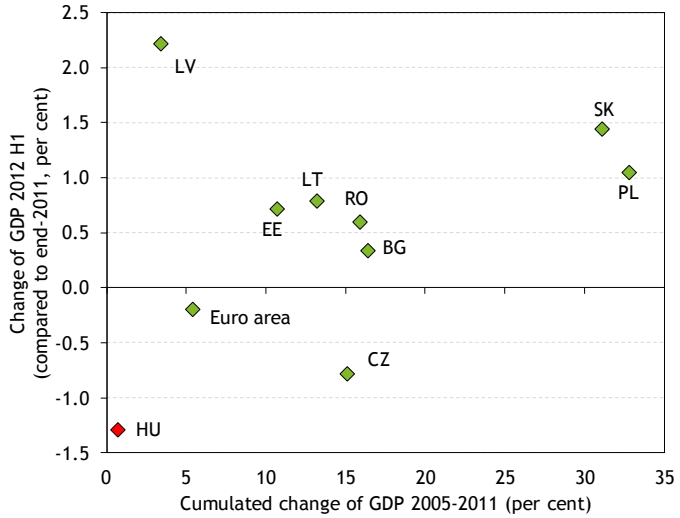
Note: Arithmetic average of groups of countries.
Source: Thomson Reuters.

Chart 6: The European rescue fund and the problems of the countries hit by the debt crisis



Note: Government debt data for 2013 are based on the spring forecast of the European Commission.
Sources: EFSF, IMF, Eurostat and European Commission.

Chart 7: Economic growth in international comparison



Source: Eurostat.

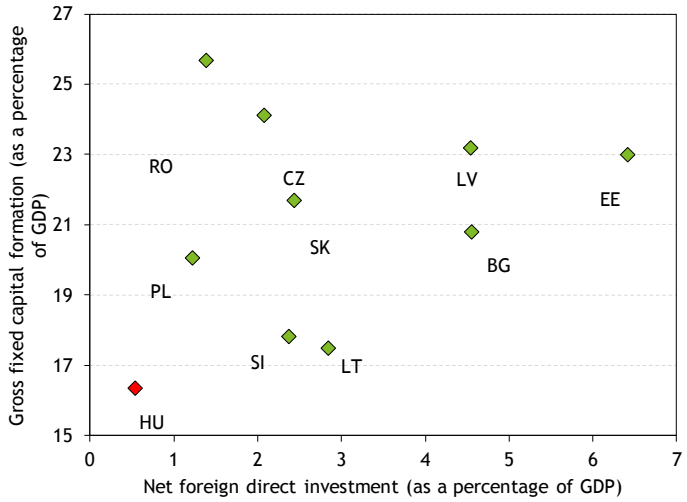
Market tensions eased markedly as a result of the crisis management measures. During the summer, risk premium sank to levels prevailing prior to July 2011, i.e. before escalation of the debt crisis (Chart 5). This was attributable to the fact that the central banks of developed countries announced further quantitative easing. Due to the negative economic outlook, the Fed has launched its third quantitative easing programme (QE3), aimed at buying securities of USD 40 billion per month for an indefinite period, contrary to the earlier programmes. In addition, it will extend its ongoing programmes until end-2012. As a result, the total monetary easing will reach a monthly USD 85 billion in the next quarter.

The emerging closer integration is a necessary but not sufficient condition for management of the crisis. However, in addition to closer integration, another necessary condition in the euro area is that the southern countries succeed in putting their economic growth and government debt on a sustainable path. Nevertheless, crisis management measures and fiscal consolidation are accompanied by significant conflicts, while timely and complete implementations are surrounded by considerable risks. Amid restrained credit supply and protracted growth problems, there is an acute risk that further rescues may be needed, inter alia for Spain (Chart 6). Meanwhile, due to the mounting potential costs, investors may become uncertain about the debt sustainability of France and Belgium, which have weaker fundamentals than the core countries. During the summer, an outlook was changed to negative on the highest rating (AAA) of Germany, the Netherlands and the European Union itself.

Deteriorating domestic economic outlook and external shocks are the major risks in Hungary

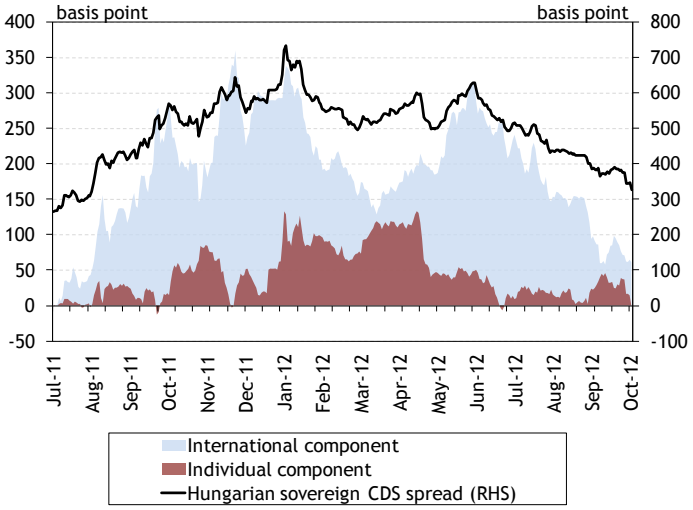
The performance of the Hungarian economy, which has fallen into recession, lags well behind that of the region. In 2012 Q2, Hungary officially slipped into a technical recession, as GDP declined in two consecutive quarters. With this, the performance of the Hungarian economy was well below that of the region (Chart 7). The unfavourable GDP figure continues to be primarily attributable to subdued domestic demand due to deleveraging of indebted households and uncertain income positions, and also to subdued investment activity (Chart 8). By contrast, it is favourable that the balance of trade continued to improve and fiscal policy has remained orderly.

Chart 8: Investment and FDI as a proportion of GDP, 2012 H1 (4 quarters)



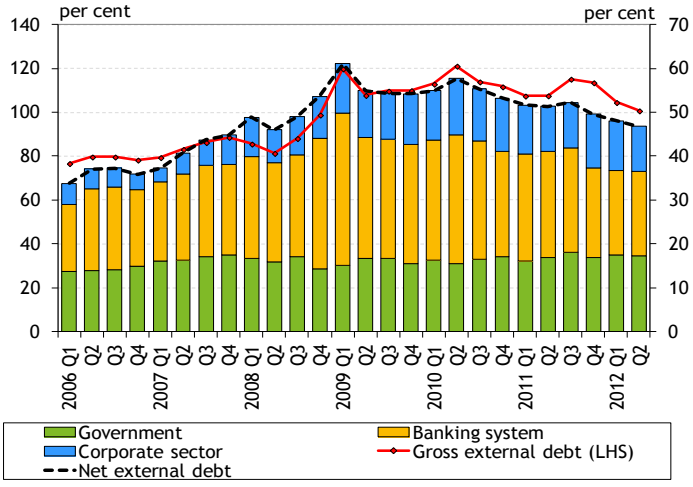
Source: Eurostat.

Chart 9: Hungarian sovereign 5-year CDS spread and the decomposition of its change since end-June 2011



Sources: Thomson Reuters and MNB.

Chart 10: Breakdown of net external debt by sectors (as a percentage of GDP)



Source: MNB.

Slow recovery is expected, with deteriorating potential growth. Based on the MNB's forecast, the economic outlook continues to worsen; a 1.4 per cent fall is expected for 2012, whereas the earlier expectation was decline of a 0.8 per cent. A slow recovery with 0.7 per cent growth is expected for next year, which is slightly worse than the June forecast, but last spring the expectation was still twice as high with an estimate of 1.5 per cent growth. Due to weak domestic demand and the regulatory risks that make investor confidence weaker, investment activity will remain subdued, resulting in a further deterioration in potential growth. Since the September issue of the *Inflation Report* downward risks have emerged due to the higher tax burden on the banking sector, which we took into account in our lending forecast, but the growth effects are only quantified in the December *Inflation Report*.

Risk premium declined considerably as a result of improving global sentiment. Highly volatile global risk appetite was reflected in the changes in Hungarian asset prices and the exchange rate of the forint as well. Following the initial deterioration after April 2012, during the summer the exchange rate of the forint and the CDS spread improved to relatively favourable levels (Chart 9), primarily due to global factors. The substantial difference between the Hungarian and regional CDS spreads has also narrowed since the latest report, which – in addition to the strong commitment to fiscal consolidation – is largely attributable to the commencement of the EU/IMF loan negotiations.

However, due to the high external indebtedness, Hungary continues to be highly vulnerable to external shocks. The financing capacity of Hungary has improved considerably since the outbreak of the crisis. As a result, net external debt and gross government debt has been declining steadily (Chart 10). At the same time, their levels remain high. Consequently, in the event of plummeting global risk appetite the country will continue to be vulnerable. An EU/IMF agreement may ensure favourable risk perception for a longer time and may further reduce the sensitivity of Hungary to risk premium shocks.

In the external environment of the financial intermediary system, financial integration contagion and the deteriorating domestic economic outlook poses major risks. The weak Hungarian economy weighs on the portfolio quality of the banking system and amplifies pro-cyclicality of

lending. This effect is also enhanced by the funding costs, which are persistently high due to the euro-area sovereign debt crisis, and by the deleveraging of parent banks, which may pose a risk even in the case of orderly deleveraging, if Hungary is disproportionately more affected by it (Box 2). As a result of the unfavourable external environment, there is a risk that the banking sector will not be able to support the economy, i.e. it will remain contractionary over the longer term.

BOX 2: REGIONAL EFFECTS OF EUROPEAN DELEVERAGING

Banking sectors in the Central and Eastern European (CEE) region represent a significant share within the cross-border exposures of euro-area banking groups. As a result of the relative geographical proximity as well as the harmonisation with EU legislation, significant exposures were or may have been built up in the region, which took place with considerable external funding in addition to domestic funds in the case of several banking groups. However, the escalation of the European sovereign debt crisis may entail a growing risk that deleveraging by euro-area banks may result in a sizeable reduction of exposures to the CEE region. One recurring conclusion of the corresponding studies is that the reduction may hit mainly those countries where the presence of foreign banks is relatively high and where banks are less independent in terms of funding, i.e. their reliance on external funds is relatively high.

Our analysis attempts to identify the factors that influence the allocation decisions of individual banking groups concerning the region. In order to map the interrelations, the lending figures, reported within the EBA survey and mainly reflecting business plans, of banking groups operating in Hungary are used as dependent variables. They are used in a simple regression analysis along individual characteristics by countries (forecasted GDP growth, CDS spread, geographical dummy variables) and affiliate banks (ROE and ROA indicators, loan-to-deposit ratios, interest margin). The advantage of this method is that individual relationships may be examined from a purely supply aspect (since that is reflected in business plans), and all of this can be examined by accounting for micro level characteristics (affiliate bank operating in a given country). The data of affiliate banks in the region of banking groups operating in Hungary were used for the analysis; the relevant financial and stock data for 2011 were collected using *Bankscope*.

With the combination of individual explanatory variables, we carried out OLS estimations, and then the two 'best' specifications were selected, taking account of the significance of the parameters and the goodness of fit. Overall, the results coincide with the expectations: the higher the CDS spread, which presumably describes the perceived risk, in a country or the higher the reliance of the given affiliate bank on external funds (based on the loan-to-deposit ratio), the more sizeable exposure reduction can be implemented by the banking group in the given country. By contrast, high return on equity of an affiliate bank, or a higher-than-regional average net interest margin slows down the reduction of credit supply.

The results are also suitable for a more thorough examination of various scenarios by using the estimations of studies and reports dealing with European deleveraging recently. These estimations are available individually as well for the various regions, but heterogeneity within a given region or individual impacts on countries cannot be examined separately. Making up for this disadvantage, based on the parameters of the estimated model specifications, we decompose the individual scenarios into individual lending effects of the different countries (however, resulting from the scheme, this still only relates to the lending of the banking groups operating in Hungary).

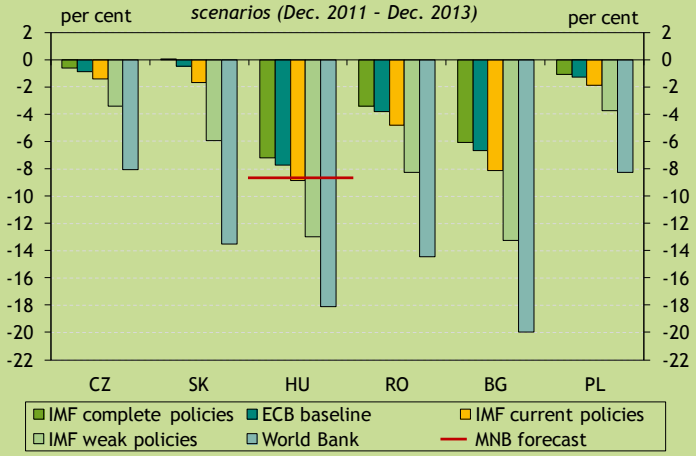
The following scenarios are used for the analysis of the European deleveraging on the CEE region (in ascending order in terms of severity):[9]

[9] The individual scenarios were published in: IMF Global Financial Stability Report, April 2012; ECB Financial Stability Review June 2012; World Bank Deleveraging WP, June 2012.

1) IMF GFSR complete policies scenario;
2) ECB FSR scenario;
3) IMF GFSR current policies scenario;
4) IMF GFSR weak policies scenario;
5) One long-term scenario in the World Bank's publication entitled 'Bank deleveraging'.

The above scenarios regarding the aggregated CEE region are decomposed into the changes in individual countries' exposures in the following manner: by banks and countries, on the basis of the estimated parameters the deviation of each individual characteristic from the group level average gives the deviation from the total regional average in terms of lending. The regional average varies among the individual scenarios. The sum of the changes in individual affiliate banks' exposure by countries represents the impact on lending in a given country. In the case of Hungary, for example, the baseline scenarios of the ECB and the IMF explain a 7–9 per cent decline in the credit supply of the banking groups under review (which is nearly identical with our own forecast), whereas riskier scenarios explain twice this much. Contraction in lending similar to that observed in Hungary can only be found in Bulgaria, but there it would materialise on a much lower overall exposure.

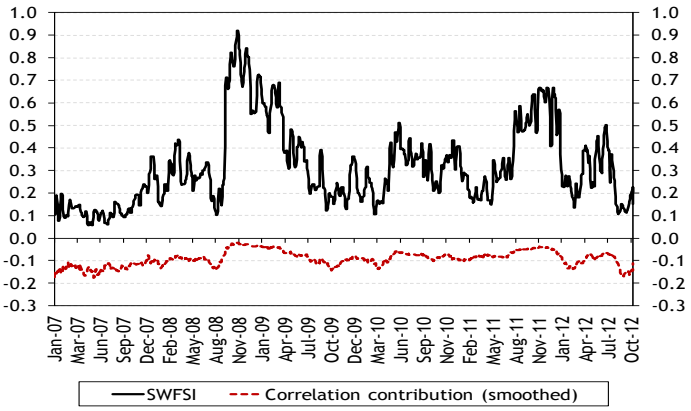
Lending effects in selected countries along various scenarios (Dec. 2011 - Dec. 2013)



Source: MNB.

Accordingly, in spite of the strategic presence in the CEE region, one cannot necessarily speak of a uniform treatment of target markets: in their allocation decisions, individual banking groups presumably distinguish between individual countries on the basis of the risk and profitability outlook; therefore, more significant heterogeneity may be observed within the region. In a regional comparison, risk premium and loan-to-deposit ratio is also relatively higher, while profitability is weaker in Hungary. Accordingly, based on the estimations, an underweighting of Hungarian exposures can be identified compared to others in the region. Consequently, through the banking groups under review, an exacerbation of European deleveraging would be relatively more disadvantageous for Hungary than for other countries in the respective peer group.

Chart 11: System-wide Financial Stress Index



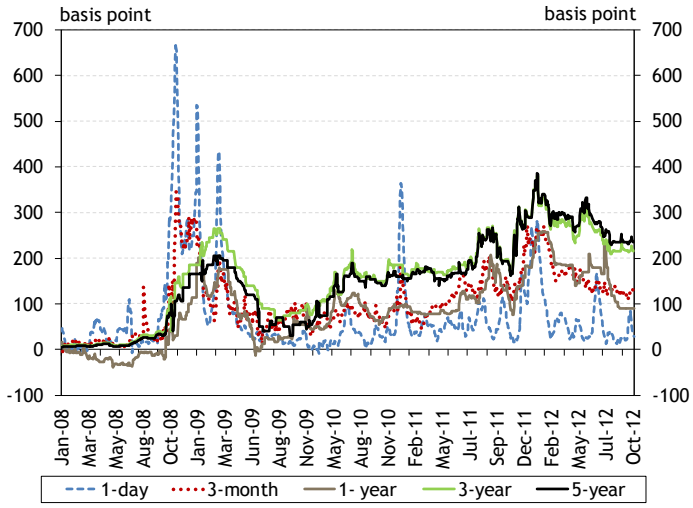
Note: The SWFSI covers the following market segments: spot foreign exchange market, capital market, secondary market of government bonds, interbank unsecured forint market, FX swap market, banking segment and the correlation contribution. A higher value means a higher stress. The correlation indicator of the SWFSI measures the co-movement between markets.
Source: MNB.

Domestic financial markets remain fragile, but market liquidity has improved

The stress level of domestic financial markets has improved markedly since mid-July.[10] Starting from early 2012, liquidity tensions eased in parallel with an improvement in risk perception and appreciation of the forint. As a result, the System-wide Financial Stress Index (SWFSI) improved considerably (Chart 11). Apart from minor temporary fluctuations in a positive direction, the stress level of the secondary market of government bonds, which takes account of credit and liquidity risks, improved as well. Hence, the stress level of the spot foreign exchange market improved markedly in May and June, and then remained practically unchanged in the subsequent period, and continues to fluctuate around the historic low of the past four years. Finally, the stress levels in

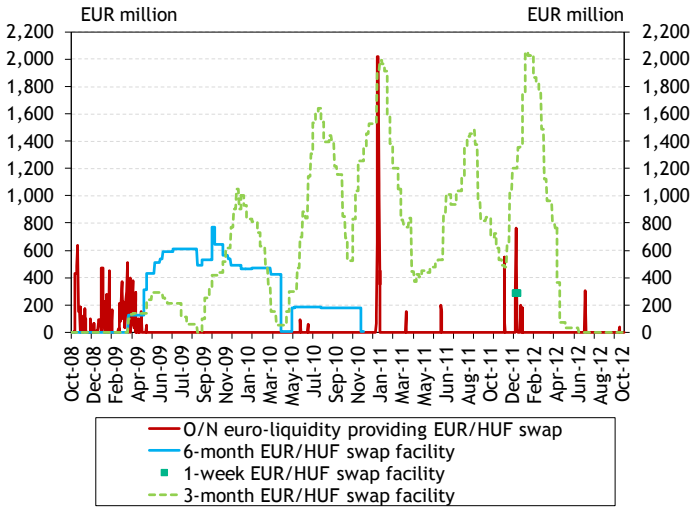
[10] For more details on the SWFSI index see: Dániel Holló: A system-wide financial stress indicator for the Hungarian financial system. MNB Occasional Papers 105, 2012.

Chart 12: Changes in overnight, three-month, one-year and over one-year forint/foreign exchange swap spreads



Note: Exponential moving averages are shown in case of the spreads with maturity of less than 1 year.
Sources: MNB and Bloomberg.

Chart 13: Outstanding amount of central bank EUR/HUF swaps



Source: MNB.

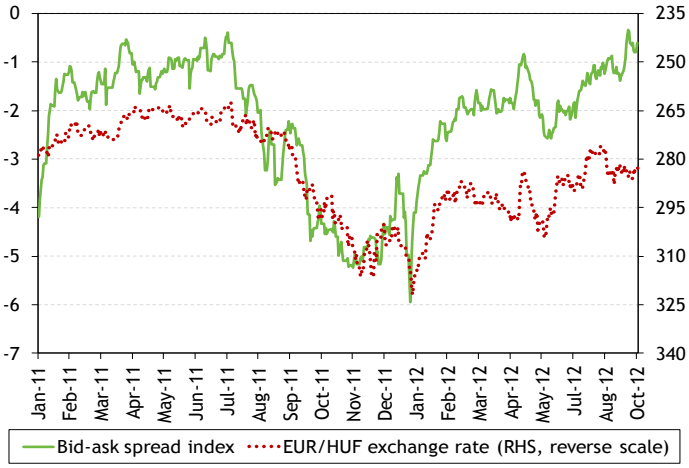
the interbank unsecured and FX swap markets improved amidst high volatility. As the indices of the individual financial markets did not show any systematic, permanent co-movement in the period under review (the correlation contribution indicator of the SWFSI[11] remained stable or decreased in absolute value), the developments currently taking place in financial markets still cannot be considered significant in terms of systemic risk.

Liquidity tensions eased slightly in the still fragile forint/foreign exchange swap market in the past half year. Since early 2012, the on-balance-sheet foreign exchange position and net swap exposure of the Hungarian banking sector followed a declining trend, pointing to moderating swap market tensions. Swap market tensions were eased by the fact that with the appreciation of the forint, the margin call requirement also declined. In addition to the improvement in the bid-ask spread indicator, this was mainly reflected in the decline in short-term FX swap spreads in the second half of the year (Chart 12). Longer-term spreads declined to a lesser extent. Spreads at shorter maturities surged only in mid-June: non-resident players strived to reduce their forint assets exposure at the half-year reporting date, which is of key importance, and tried to invest the resulting available forint liquidity through FX swaps, which can be considered covered assets. In this period as well, the (negative) effect of price liquidity indicators (widening bid-ask spreads and deteriorating price-effect indicator) was offset by an increase in the number of transactions and in the average size of transactions.

In parallel with the decline in market exposure, the use of the MNB's FX swap facilities also dropped sharply. During the tensions of January 2012, the outstanding amount of the 3-month FX-swap instrument reached an all-time high of EUR 2,055 million, followed by a steady decline since then (Chart 13). The 3-month FX swap facility has not been used since June 2012. There was no demand for central bank instruments due to the sound market conditions and the relatively high price.

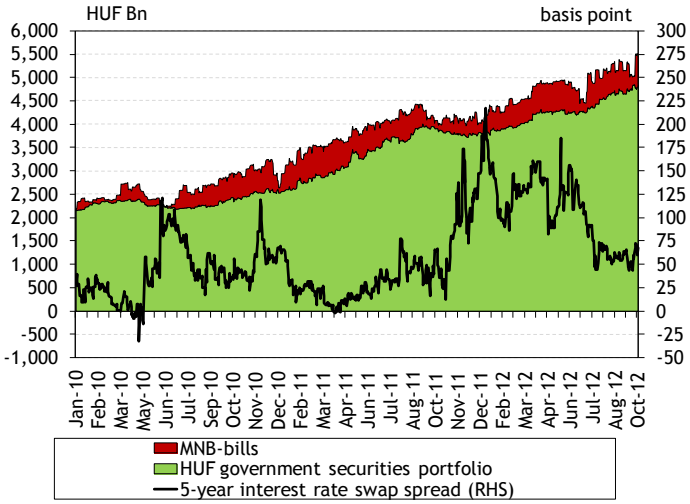
[11] The extent of correlation contribution can also be considered as a separate metric of systemic stress. The smaller the co-movement between the segment stress indices (i.e. smaller segment cross-correlations than 1), the less systemic risk is present. When cross-correlations between the segment stress indices are smaller than one, the correlation contribution to the system-wide financial stress index is negative. If the system-wide financial stress indicator had been computed as a simple arithmetic average of the segment stress indices, then perfect cross-correlations would have been assumed, which in less turbulent periods would result in overestimation of the system-wide stress level. The system-wide financial stress index (SWFSI) computed with the "correlation weights" eliminates this problem. Hence, the system-wide financial stress indices coincide with or approach each other only in situations when the stress trigger event is important from a systemic risk perspective (i.e. there is a strong, positive co-movement between the segment-specific risks). Correlation contribution = SWFSI with correlation weights minus SWFSI computed as a simple arithmetic average of the segment stress indices.

Chart 14: HUF/EUR exchange rate and the bid-ask spread index of the spot HUF/EUR foreign exchange market



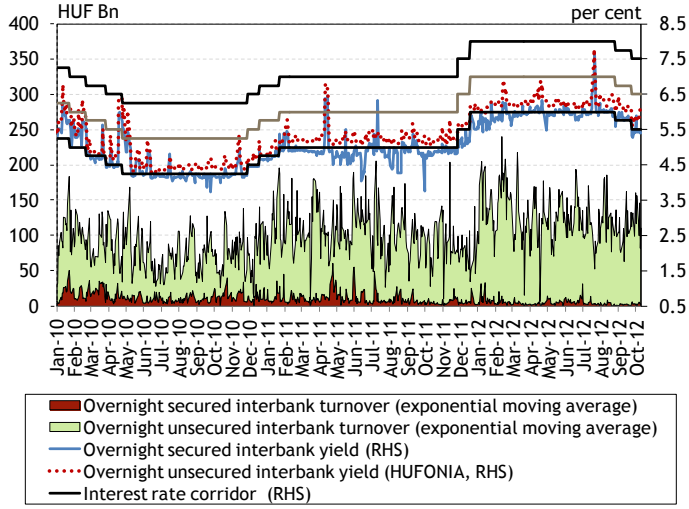
Source: MNB.

Chart 15: Non-residents' government securities and MNB bill holdings, and the five-year interest rate swap spread



Sources: Government Debt Management Agency (ÁKK), MNB and Bloomberg.

Chart 16: Turnover and interest rate of the overnight secured and unsecured interbank market



Source: MNB.

The liquidity of the forint/euro spot foreign exchange market showed strong co-movement with changes in the exchange rate in the past half year as well. During the exchange rate depreciation in April and May 2012, liquidity also deteriorated in the market, primarily reflected in an increase in the bid-ask spread (Chart 14). As of 2012 H2, as the exchange rate embarked on an appreciation path, the bid-ask spread also started to narrow. In parallel, non-residents built up a significant synthetic forward long forint position by means of spot and FX swap transactions, after taking the earlier positions of the opposite direction.

The liquidity of forint-denominated government bonds improved slightly in H2. In 2012, non-residents' share within the total outstanding amount continued to increase compared to the previous years: this share grew from 20–25 per cent at end-2010 to 45 per cent by August 2012. As a result, non-residents' government securities holdings increased to a record level (Chart 15). However, the favourable permanent effect on liquidity is mitigated by the strongly concentrated foreign ownership structure, which can easily amplify the effect of an external shock.

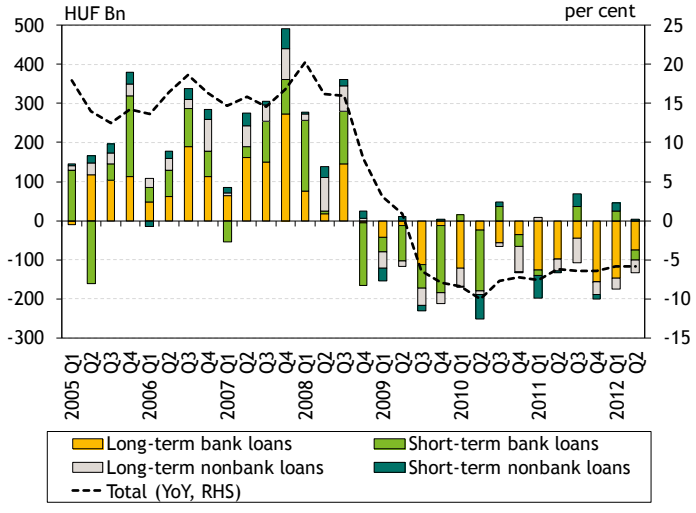
Apart from a temporary downswing in July, the liquidity of the forint interbank market has not changed meaningfully. Domestic interbank market turnover did not change considerably for most of the period under review, and can still be considered low (Chart 16). In the past one year, the average size of transactions exceeded the multi-annual average observed prior to the 2008 crisis, whereas the number of transactions is below the pre-crisis historic average. The latter is mostly attributable to the decline in counterparty limits. Overnight interbank yields typically continued to stick to the lower bound of the interest rate corridor. However, in July 2012 they approached the top edge of the interest rate corridor. The liquidity shock from the Single Treasury Account at end-July (primarily due to the payment of VAT and sector specific extra taxes, and partly due to the lack of experience caused by the intraday settlement launched in July) prompted banks to borrow larger amounts from the central bank temporarily, until end-July.

2. LENDING DEVELOPMENTS IN HUNGARY – Lending to non-financial corporations is driven by the procyclical behaviour of the banking sector; demand may rise in household lending due to the state interest rate subsidy

The contraction in lending continued in both the corporate and household segments throughout 2012 H1. Although liquidity tensions, which have a negative effect on the lending capacity of the banking sector, eased on the supply side, banks' decreasing risk tolerance became more pronounced with the deterioration in economic outlook. Accordingly, credit conditions were reported to have tightened in the corporate segment, while demand for loans also weakened in parallel with the economic downturn. As a result of demand and supply constraints, corporate lending in Hungary is among the weakest in Europe – with developments similar to the trends in euro-area periphery countries. Contraction in household loans outstanding continued as well, following the early repayment scheme, attributable to the persistently tight credit conditions which evolved during the early repayment scheme and the further inevitable deleveraging of indebted households. Although an easing of the strict credit conditions started in Q2, households' demand for loans remained very subdued. As regards the households, one positive development is that a further easing of credit conditions and an increase in credit supply can be expected due to the state interest rate subsidy scheme.

Given the deteriorating economic outlook, the rising tax burden on banks and the persistently tight credit conditions, a downward revision was carried out in the forecast for corporate lending: a 5.3 per cent fall in 2013 and a further 4.1 per cent decline in 2014 is expected in the outstanding loans of domestic financial intermediaries. In the household segment, the joint result of subdued demand for loans and the rising tax burden is expected to be partially offset by the positive effects of the interest rate subsidy and policy rate cuts. Accordingly, a modest revision was carried out in household lending forecast compared to the expectations published in September. Loans outstanding are expected to decline by 3.4 per cent and 2.0 per cent in 2013 and 2014, respectively. No significant increase is expected in either sector before 2015.

Chart 17: Net quarterly changes in domestic corporate loans outstanding



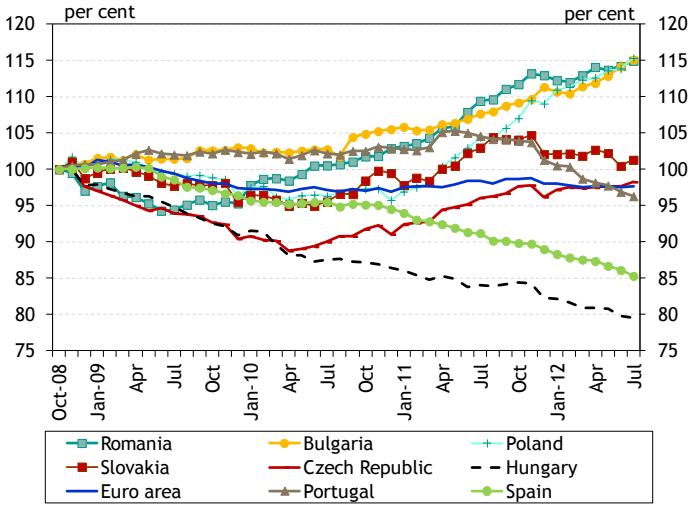
Source: MNB.

Strong procyclical behaviour of banks pertains particularly to corporate lending

No material improvement has been seen in corporate lending. The trends observed earlier in corporate lending continued in 2012 H1. Contraction in loans outstanding continues to be driven by the decline in long-term (foreign currency) loans, which have not grown since end-2008. Expansion in short-term loans continues to be occasional, increasing only in some quarters since the crisis (Chart 17).

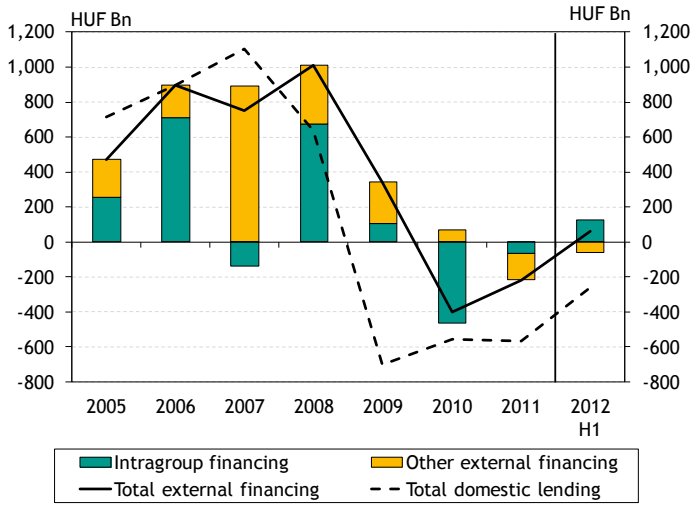
Corporate lending in Hungary is among the weakest in international comparison. Developments in corporate lending in Hungary relative to other countries in the region remained unchanged compared to end-2011. Corporate loans expanded dynamically in most of the countries of the region, with the exception of stagnation in Slovakia, but the overall decline since the onset of the crisis in Hungary is a clear exception in this respect (Chart 18). Similar developments in lending have been observed in euro-area periphery countries.

Chart 18: Corporate lending in international comparison (October 2008 = 100 per cent)



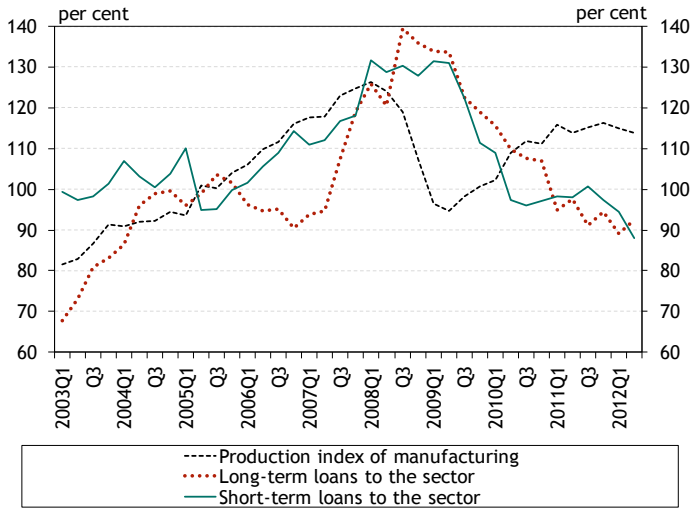
Sources: Statistics of national central banks.

Chart 19: Net annual changes in external financing to the corporate sector



Source: MNB.

Chart 20: Changes in manufacturing production and in short- and long-term loans to the sector (2005 = 100 per cent)



Source: MNB.

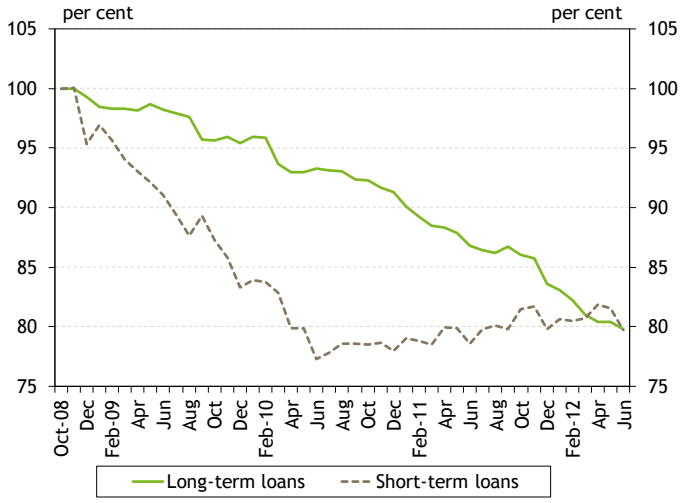
Substitution with external financing is still not common. For the domestic corporate sector, cross-border lending could function as an alternative to domestic financial intermediaries. In 2011, the loans borrowed from both foreign lenders and parent companies declined in the corporate sector, although the latter increased mildly in 2012 H1 (Chart 19). Accordingly, domestic companies are not typically replacing the lacking domestic financing with foreign loans, except at a limited number of large enterprises.

Credit demand is declining due the drop in industrial production, along with persistently subdued investment activity. A duality continues to be observed in developments in corporate investments: most of the sectors are characterised by extremely weak underlying circumstances, which is only mitigated by some key investment in manufacturing. Due to this low level of investment, demand for long-term corporate loans remains subdued. At the same time, in parallel with the deterioration in external demand and economic outlook, industrial production also declined. The decrease in production results in a further postponement of investment decisions as well as in a decline in demand for short-term loans financing working capital.

A marked slowdown in production and a decline in borrowings have been observed in manufacturing as well. A drop in the production of manufacturing, which is of key importance in the Hungarian economy, was recorded in two successive quarters in 2012, which is unprecedented since 2009. This took place in spite of the fact that some earlier automotive projects launched production in 2012 H1. In the case of a permanent weakening in the activity of the whole sector, a continued decline in long-term loans is expected, while a fall in outstanding short-term loans is observed in parallel with the downturn in production (Chart 20).

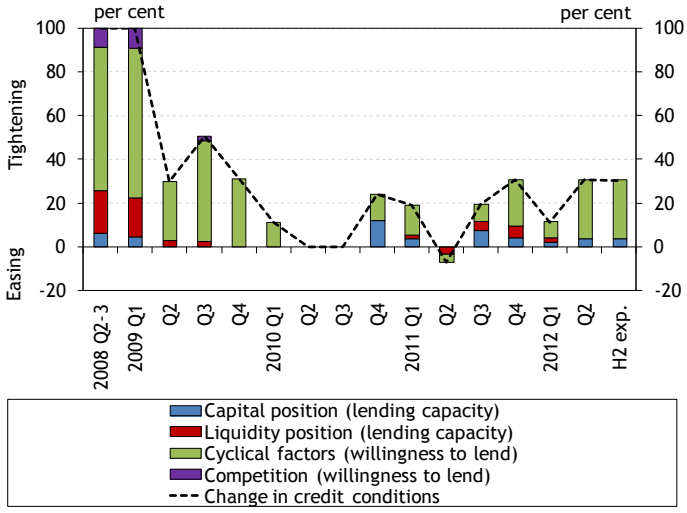
Tighter opportunities for alternative financing are leading to rising demand for short-term bank credit. In parallel with the gradually declining long-term lending, the outstanding amount of short-term loans has also dropped substantially since the onset of the crisis. The overall decrease in this loan type amounts to 20 per cent on average, with the largest declines recorded in the manufacturing, trade and transport sectors. In contrast to long-term loans, however, short-term financing is not declining

Chart 21: Outstanding amount of corporate loans with breakdown by maturities (October 2008 = 100 per cent)



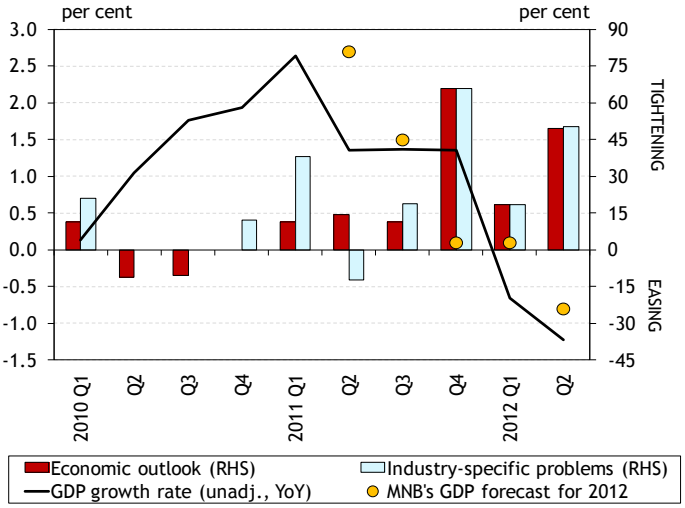
Source: MNB.

Chart 22: Contribution of individual factors to banks' credit conditions in the corporate segment



Source: MNB lending survey.

Chart 23: The role of economic prospects and industry specific problems in the changes in corporate credit conditions



Sources: CSO and MNB lending survey.

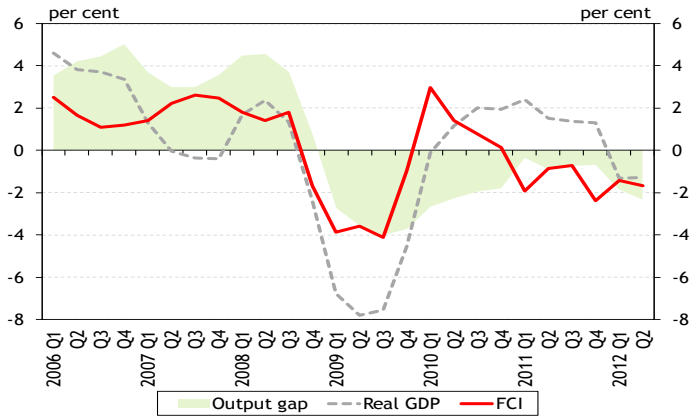
steadily; moreover the respective outstanding amount of short-term loans has increased moderately since mid-2010 (Chart 21). This may be explained by rising demand for short-term loans. Since the availability of long-term credit has shrunk (including the roll-over of short term loans as well) and so has trade credit, it can be assumed, that non-financial corporations, including SMEs in particular, are increasingly reliant on short-term bank loans. Thus, easing credit conditions in this segment is of outstanding importance.

The lending capacity factors eased on the supply side. At end-2011, banks indicated a broad-based tightening of credit conditions in the bank lending survey; the underlying reasons were mainly the capital and particularly the liquidity position, which are the determinants of lending capacity. In 2012, the contribution of these factors abated, especially on the liquidity side: the appreciation of the forint and the decline in swap and CDS spreads may have resulted in an improvement in lending capacity (Chart 22).

Risk tolerance continues to decline as the economic outlook worsens. The deteriorating economic outlook affects banks: similarly to the findings of the euro-area lending survey, the tightening in credit conditions was mainly attributable to cyclical factors related to the deteriorating economic environment (Chart 23). Accordingly, the improvement in lending capacity was essentially offset by a decline in willingness to lend, resulting in a further tightening in credit conditions. Domestic banks have been steadily tightening credit conditions in the corporate segment, and have indicated further tightening for 2012 H2 as well. In view of the further tightening, the risk of credit crunch remains elevated.

Financial intermediaries' deleveraging continues to significantly impact the real economy; an expansion of guarantee undertakings could mitigate this problem over the short term. Although the Financial Conditions Index (FCI) covers lending developments as a whole, it also allows for conclusions to be drawn regarding the state of corporate lending as well. The FCI index shows the extent of the contribution of financial conditions to the annual real GDP growth rate between 2002 Q2 and 2012 Q2. The financial intermediary sector contributed significantly to the economic downturn after 2008. When it bottomed out, the annual

Chart 24: Financial Conditions Index (FCI), real GDP and the output gap



Note: The annual increase in the FCI shows the contribution of the financial intermediary system (banking sector) to the annual growth rate of real GDP. If the sign of the FCI is identical to that of the output gap, then the banking sector behaves procyclically.
Source: MNB.

contraction in real GDP was 8 per cent, about half of which was caused by the financial sector. In 2010, the real economy slowly started to grow again, but the banking system restrained this expansion, and the procyclical behaviour of the financial system is contributing significantly to the current recession as well (Chart 24). However, despite the present tight supply conditions, the situation still cannot be considered as a 'credit crunch'; in any case, the easing of supply constraints would be desirable in terms of growth. The recurring conclusion of the *Financial Stability Reports* is that the most efficient way to mitigate supply contraction over the short term is to expand the guarantees undertaken by the state (Box 3). Over the longer term, however, the profitability of the banking sector must be restored.

BOX 3: THE ROLE OF CREDIT GUARANTEE IN CORPORATE LENDING[12]

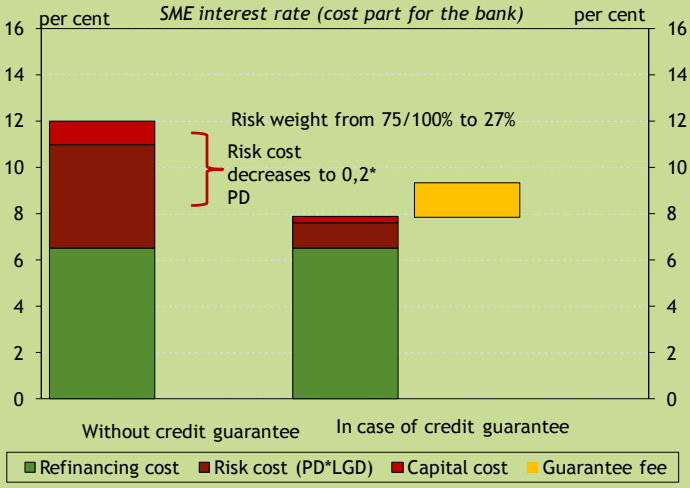
The largest participant in granting guarantees with state counter guarantee in Hungary is Garantiqa Zrt., with a market share of nearly 90 per cent. Between 2007 and 2011, it undertook joint and several guarantees for an average 20,000 small- and medium-sized enterprises (SMEs) annually, for new loans amounting to HUF 270 billion, of which 80–85 per cent were short-term loans. Garantiqa Zrt. undertakes joint and several guarantees for a maximum 80 per cent of loans for an annual guarantee fee of 1.5–2.2 per cent, and at present 85 per cent of the portion covered by guarantee is counter guaranteed by the Hungarian State. With this, the banks' expected loss (EL)[13] on the guaranteed portfolio ceteris paribus declines considerably due to the drop in loss given default (LGD). The declining risk costs and lower capital needs due to guarantee may jointly result in an increase in the credit supply of banks (credit rationing eases).

The probability of default[14] (PD) of the loans entering the portfolio of Garantiqa Zrt. in 2010 was 5.5 per cent on average, on the basis of the estimate we used.[15] Both the level and distribution are similar to banks' total outstanding new non-guaranteed SME loans. At the same time, based on the budgetary counter guarantees drawn in the years of the crisis and the collection revenues paid to the budget, the loss given default would be around 90 per cent without guarantee.[16] Based on the above, the 4.5–5 per cent loss given default of the guaranteed portfolio is much higher than the around 3.5 per cent level for the banking sector's total outstanding corporate loans, and thus, overall, the guaranteed portfolio is riskier, which is natural as well, because with this it is able to ease credit rationing and act in counter-cyclical manner.

The characteristics of companies that have credit guarantee (as well) also indicate that these companies are riskier than the ones that do not have a guarantee. Based on logit estimate (where the dependent variable is that the company has a guarantee (as well) or not), less liquid, smaller companies that depend on domestic markets and have fewer tangible assets will have a guaranteed loan with a higher probability. In addition, the probability of a guarantee is higher with a greater amount of long-term liabilities, whereas its probability is lower if the amount of receivables and short-term liabilities is greater.[17]

[12] Guarantees provided to individual entrepreneurs are not included in data within the box.
[13] Expected loss is the product of the probability of default (PD), loss given default (LGD) and exposure at default (EAD): EL=PDxLGDxEAD.
[14] In addition to bank scoring, clients are also subject to screening by Garantiqa during the judgement of the credit guarantee.
[15] For more details see Box 5.
[16] However, the LGD approximated this way is presumably distorted upwards: firstly, in the case of a guarantee, the given SME does not necessarily want to offer any collateral; secondly, the debt is typically collected by the creditor bank, while the incentives of efficient collection are weak because of the joint and several guarantee.
[17] Higher amounts of receivables and short-term liabilities may capture the degree of integration (wider range of suppliers and sellers).

At the same time, the conclusion that clients that have a credit guarantee are riskier does not mean that these companies cannot receive commercial bank loans without a credit guarantee. Indeed, the ratio of companies that have only guaranteed loans is barely 5 per cent of all companies with guaranteed loans. The remaining 95 per cent of companies have access to both normal commercial bank loans and guaranteed loans as well: in the case of companies that have a guarantee (as well), the proportion of guaranteed loans was around an average 40 per cent of the contract value of new loans between 2007 and 2010. All of this means that where lending would have materialised without a guarantee as well, the given company received more credit with the guarantee.



Note: Illustration based on 3 large banks' offered rates.

Taking account of the result concerning the loss given default and the offered interest rate conditions of 3 large banks, the average offered rate of SMEs belonging to the guaranteed portfolio would be around 12 per cent without a guarantee, disregarding other fees and the profit margin. Of this, the reference rate is around 6.5 per cent, the credit risk premium is around 4.5–5 per cent and the cost of capital is about 1–1.5 per cent. At the same time, the joint and several guarantee provided with state counter guarantee translates into a decline in the credit risk premium due to a lower potential loss for the bank, while the cost of capital decreases as a consequence of the lower risk weights of state counter guarantee. Accordingly, the average borrowing rate of an SME belonging to the guaranteed portfolio declines from around 12 per cent to 10 per cent, taking account of the 1.5–2 per cent guarantee fee as well.

The economic impact of Garantiqa (credit guarantees) for a given year

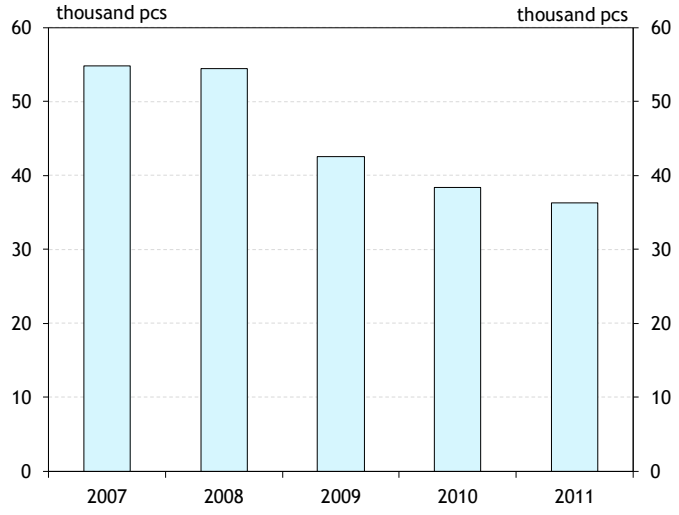
	2009	2010	2011
The effect of guaranteed loans on total corporate loans (Bn HUF)	282	220	197
Total corporate loans (Bn HUF)	6 668	6 215	5 829
1. Total corporate loans without credit guarantees (Bn HUF)	6 387	5 995	5 632
Change in outstanding amount (%)	-4.2	-3.5	-3.4
Contribution to GDP (%)	-0.8	-0.7	-0.7
2. Total corporate loans without 50 per cent of credit guarantees (Bn HUF)	6 528	6 105	5 730
Change in outstanding amount (%)	-2.1	-1.8	-1.7
Contribution to GDP (%)	-0.4	-0.4	-0.3

In summary, our findings show that on the basis of their probability of default (PD) the overwhelming majority of companies that have a guarantee are creditworthy at commercial banks, but they can satisfy their total loan demand only if there is credit guarantee, presumably because of their increasing risks due to higher indebtedness and because of the insufficient collateral they have. It is important to note that if companies' total loan demand was satisfied even without a credit guarantee, a credit guarantee could still have a positive impact: namely, banks' credit supply would increase as a result of the cost reduction achieved, but for another clientele. For lack of individual interest rate and collateral data, real economy effects are difficult to estimate, so we assumed two scenarios: in the first case, no new lending would have taken place without credit guarantees (upper estimate), whereas in the second case the riskier half of the new contracts of Garantiqa (the part to the right from the peak of the PD distribution) does not receive guaranteed loans. Of the above, the latter is considered the reasonable scenario. If it had taken place, corporate loans outstanding would have declined by 1.7–2.1 per cent in a given year during the crisis, which – using the findings of Tamási – Világi (2011)[18], namely that 1 per cent decrease in credit supply results in 0.2 per cent drop in GDP – would have resulted in an 0.3–0.4 per cent lower GDP in real terms (cumulatively around 1 per cent in 3 years).

[18] Tamási – Világi (2011) identify loan supply shocks using a SVAR model, suggesting that a 1 per cent decline in corporate loans outstanding results in an 0.2 per cent fall in GDP. For more details see: Tamási, B. – Világi, B. (2011): Identification of credit supply shocks in a Bayesian SVAR model of the Hungarian economy. MNB WP.

Concerning the impact of credit guarantees on the economy, findings in international literature are also clearly positive (World Bank 2012).[19] Guarantees resulted in higher loans outstanding in the SME segment, and also reduced credit rationing (Crowing, 2010). In Canada, based on the findings of Riding et al. (2010), 75 per cent of companies would not have received loans. According to the calculations of Uesugi et al. (2010), in Japan (where some of the loans materialise even without a guarantee), for a given year, credit guarantees resulted in 2–3 percentage points higher loans outstanding as a proportion of balance sheet total. According to the calculations of Schmidt et al. (2010), in Germany, without guaranteed loans (all loans do not materialise without guarantee), corporate loans outstanding would have declined by 0.3 per cent in a given year, resulting in an 0.1 per cent lower GDP.

Chart 25: The number of borrowing companies in the given year



Source: Central Credit Information System.

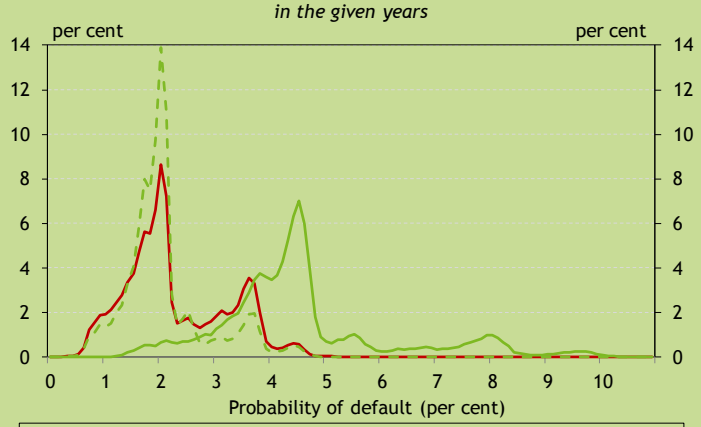
In addition to demand and supply factors, the changing composition of potential borrowers also influences developments in lending. Steady tightening in supply was observed since the crisis, and the analysed micro data also show that fewer companies borrowed than prior to the crisis (Chart 25). This, however, reflects not only demand and supply factors. Changes in the macroeconomic environment may also entail fundamental changes in the default risk and creditworthiness of companies. If economic activity rebounds, the net value of companies increases, and in parallel with that their creditworthiness also improves. Accordingly, if supply conditions remain unchanged, the number of companies that can borrow increases, i.e. *ceteris paribus* lending also expands. In a recessionary environment the opposite occurs: the economic net value of companies declines, i.e. creditworthiness deteriorates, and the number of companies with access to credit declines. Accordingly, a contraction in lending is expected due to the changing composition of companies as well, although it is not certain at all that banks actually lend only to better-quality clients (Box 4).

BOX 4: DECOMPOSITION OF THE DEFAULT RISK OF CORPORATE LOANS

In the analysis of credit markets, in addition to the lending rate, the default risk of companies with credit demand fundamentally influences lending. Therefore, in order to understand lending it is of utmost importance to take into account changes in credit risks. The data of the Central Credit Information System (CCIS) allow the analysis of the changes that took place in default risk of borrowers. Upon evaluation of loan applications, banks typically use scoring systems primarily based on corporate balance sheets and profit and loss statements. Within that, they assess the default risk of companies on the basis of various corporate characteristics (such as size, profitability, etc.), and loans can only be extended above a pre-determined score (cut-off point). When banks tighten their non-price credit conditions, it typically implies raising the score threshold of access to loans.

[19] For more details see: World Bank (2012) Global Financial Development Report. Riding et al. (2007): Incrementality of SME loan Guarantees. Small Business Econ. Schmidt et al. (2010): Quantification of the macroeconomic effects of the activities of German Guarantee Banks under the framework conditions of the global financial and economic crisis. Cowling, M. (2010): The role of loan guarantee schemes in alleviating credit rationing in the UK. J. of Fin. Stab. Uesugi et al. (2010): The effectiveness of public guarantees in the Japanese loan market. J. of the Japanese and intl. econ.

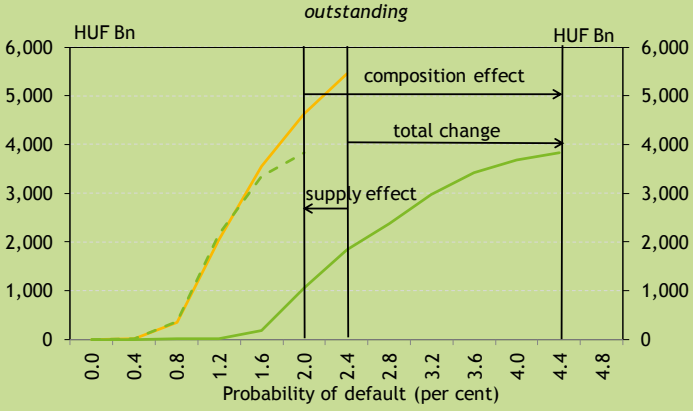
Distribution of new loans according to probability of default in the given years



Source: Central Credit Information System.

Using the data of borrowing companies, we prepared a score estimate for the 2007–2011 period, similar to banks' scoring models. The result variable of the logit estimate is companies' probability of default within one year. Its explanatory variables are the following: total liabilities, liquid assets and sales revenue as a proportion of the balance sheet total, profit after tax and dividends as a proportion of the sales revenue, the logarithm of the balance sheet total, whether the given company is an SME, it has export sales revenue, and finally the denomination of its loan. The effect of the changes in the macroeconomic environment was measured by separate variables (year dummies). The effect of the behaviour of banks (which we called supply effect) and the effect of the changes in macroeconomic prospects (composition effect) appear simultaneously in the comparison of the probabilities of default of pre-crisis and post-crisis new loans. The composition effect means that, with unchanged individual-level corporate characteristics, the macroeconomic environment has a relevant impact on the probability of default of all the companies at the whole economy level, and through that on the number of creditworthy clients as well. If the supply and composition effects are separated,[20] it can be stated that of the factors that have an impact on the probability of default, in the post-crisis period the latter significantly increased the probability of default of companies, and thus a considerable deterioration took place in the risk of loans extended.

Amount of loans that can be extended in the given year as a function of the average risk weighted with the loans outstanding



Source: Central Credit Information System.

The next chart in the box shows the amount of loans that the banking sector would have been able to extend in each year at a given average risk, based on the estimated probabilities of default. The last point of the lines for a given year always shows the new loan volumes for that year and its average risk weighted with the loans outstanding.[21] The increase in risk stemming from the deterioration in the general macroeconomic environment is measured by the composition effect; it is apparent that this factor was crucial in the change of the probability of default. The supply effect shows that banks' lending capacity (capital and liquidity constraints), willingness to lend (risk aversion) as well as their reaction to the changes in the macroeconomic environment and in demand (their behaviour stemming from profit maximisation) together skewed lending towards a lower probability of default, i.e. tighter credit conditions (which is in line with the findings of the lending surveys conducted by the Bank).[22] Given the deterioration in the economic outlook, the pre-crisis volume of new loans could have been extended following the outbreak of the crisis only with a significantly higher probability of default (PD): if the banking sector had undertaken the same average risk in 2011 as in 2007, new loan volumes would have been approximately half of the actually extended one and one third of the lending in 2007.

[20] It means the disregarding of the effect of the year dummy. Composition effect in this case means the joint effect of two types of compositions. On the one hand, given the change in the macroeconomic environment, the distribution of the total set of corporations according to risk changed. On the other hand, compared to that, of all the companies the risk of those that have a demand for loans may have changed in another way. The data do not allow the separation of these two effects.

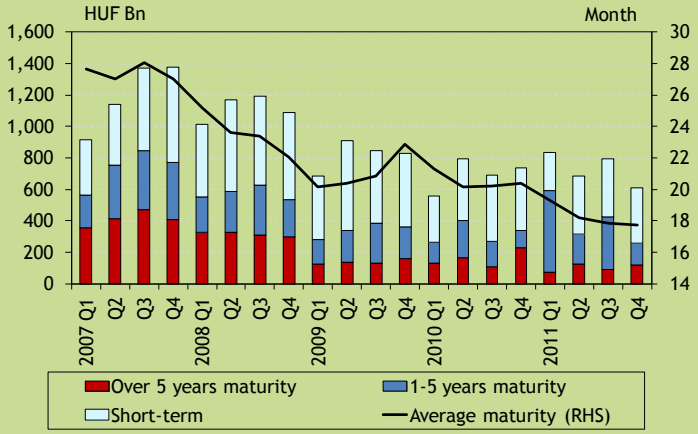
[21] Given the lack of a demand curve, we do not have information on the risk of a greater loan volume than the one that has taken place. We do not have estimates for output with the assumption of an unchanged macroeconomic environment either. We can only quantify the effect of the change in composition on the risk; accordingly both lines for 2011 show the amount actually lent.

[22] Various shocks may have different impacts on the probability of default and on the amount of loans extended. Therefore, the composition and supply effects mentioned here may appear with different ratios in the amount of loans extended than in the risk. The decomposition used here cannot be compared with the demand-supply decomposition in lending either.

	Amount of new loans (Bn HUF)			Average probability of default (per cent)				
	2,007	2,011	Change (per cent)	2007	2011	Change	Supply	Portfolio
Agriculture, mining	282	240	-14.89	2.57	5.06	2.49	-0.24	2.73
Manufacturing	1,190	1,140	-4.20	1.98	3.25	1.27	-0.49	1.76
Construction	533	200	-62.48	2.63	4.97	2.33	-0.35	2.68
Trade	1,360	841	-38.16	2.28	4.11	1.83	-0.40	2.23
Transport, tourism, catering	436	285	-34.63	2.32	4.33	2.01	-0.33	2.34
Information, communication, research	383	321	-16.19	2.28	4.15	1.86	-0.38	2.24
Real estate transactions, financial and insurance services	891	437	-50.95	3.24	7.70	4.46	0.35	4.11
Administration, education, health care	136	128	-5.88	2.92	6.65	3.73	0.16	3.57
Other	256	265	3.52	1.69	2.77	1.08	-0.43	1.50
Total	5,467	3,857	-29.45	2.41	4.38	1.97	-0.40	2.36

The sectoral breakdown of the company default risk and the change in lending shows considerable heterogeneity. Deterioration in the macroeconomic environment increased the probability of default in each sector, although to different extents. The impact of the change in supply on the probability of default varies across sectors even in terms of its sign. Positive effects can be observed in those two sectors where the composition effect increased the probability of default to the largest degree. Presumably, this phenomenon is attributable to banks' forced lending. With the increase in risks, the volume of new loans fell in each sector (with one exception), most significantly in *Construction* and in the sector of *Real estate transactions, financial and insurance activity*, which is closely related to the former. It is also evident that the impact of tighter credit conditions on lending varies across sectors: in spite of the fact that the greatest tightening (the greatest supply effect in absolute terms) occurred in loans to manufacturing, the fall in the volume of new loans was the smallest in this sector.

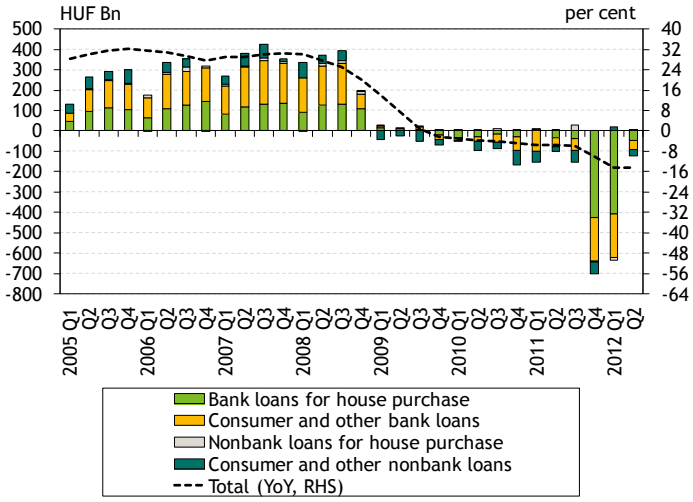
Maturity structure of newly issued corporate loans



Source: Central Credit Information System.

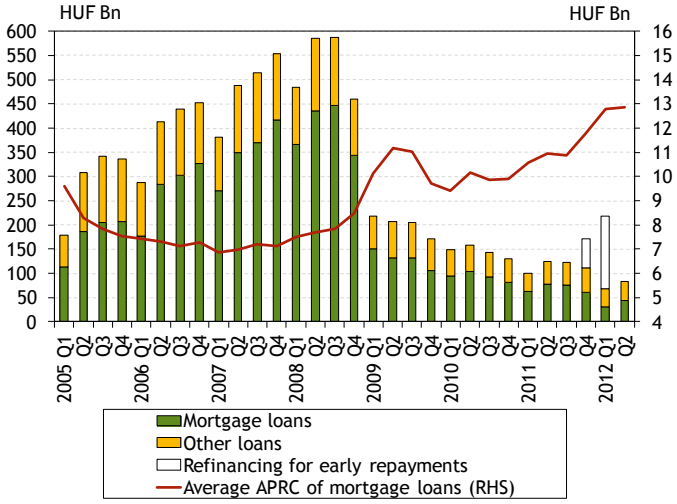
Banks may react in three ways to the risks stemming from the composition effect: they do not lend to companies that were considered creditworthy before (they tighten credit conditions), they lend to companies at higher interest rates, or they lend with shorter original maturity, reducing the default risks. The extent of the first reaction is shown by the supply effect. Interest rate spreads also increased in the period under review, but interest rate hikes can only be an efficient instrument to a certain extent. Namely, a higher interest rate increases probability of default, and thus the bank may be unable to charge a sufficiently high interest rate to make the loan profitable enough for the bank, taking account of the risks. This phenomenon is called credit rationing. Finally, banks' adjustment to changed risks is reflected in the maturities of new loans as well: maturities of new loans shortened significantly; especially the quantity of (typically investment) loans with a maturity of over five years fell drastically. Of course, this latter development may be explained by demand reasons as well: in recession periods, given weak aggregate demand, companies do not expand their production capacities, postpone their larger-volume investment, and they borrow primarily for liquidity reasons.

Chart 26: Net quarterly changes in loans to households



Source: MNB.

Chart 27: Gross lending of the domestic banking sector in the household segment



Source: MNB.

In parallel with easing supply conditions, households' demand for loans remains subdued

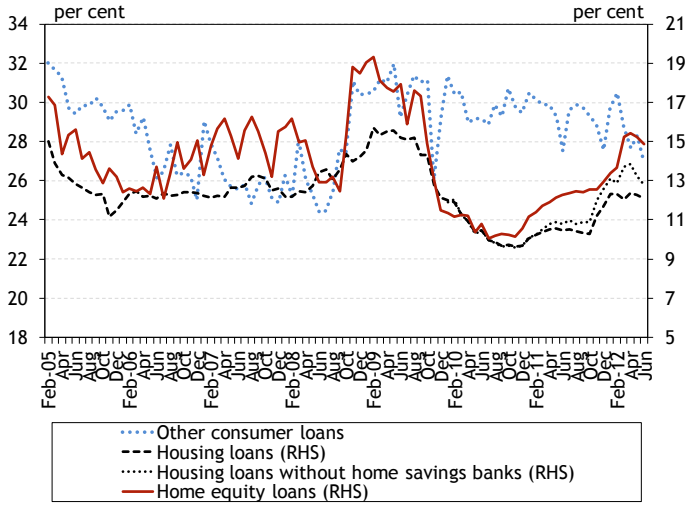
Contraction in household loans outstanding continued after the early repayment scheme ended as well. In 2012 H1, domestic financial intermediaries' household loans outstanding fell drastically, two third of which was attributable to the effect of the early repayment scheme (Chart 26). The scheme affected both housing loans and consumer loans as well, through home equity loans. Disregarding the amount of early repayments, the household sector would still repay debt in net terms.

Apart from refinancing loans related to early repayments, new loan volumes dropped sharply. The decline in outstanding loans caused by the early repayments has, ceteris paribus, a positive impact on the quarterly net change in loans outstanding, as the amount of the regular principal payment of the loans concerned is not included in the further repayments. However, the decline in loans outstanding in the two quarters, in addition to the early repayments, exceeds that of the same period last year, which is attributable to a drop in new loan volumes. In 2012 H1, new loan volumes sank to levels unseen since the early 2000s, amounting to approximately 70 per cent of the average volume of the period preceding the early repayments (Chart 27). This magnitude of a decline in lending is primarily attributable to the tightening of credit conditions in connection with the early repayments.

Easing in credit conditions only started in Q2. During the period of early repayments, credit conditions were reported to have tightened in the household segment, which fundamentally determined developments in 2011 Q4 and 2012 Q1. The strict non-price conditions were slightly eased only in 2012 Q2, when banks eased the payment-to-income (PTI) and loan-to-value (LTV) ratios. Looking ahead, on the one hand, lenders participating in the lending survey plan a slight tightening in conditions on risky loans in 2012 H2. On the other hand, further easing is expected, mainly in price conditions.

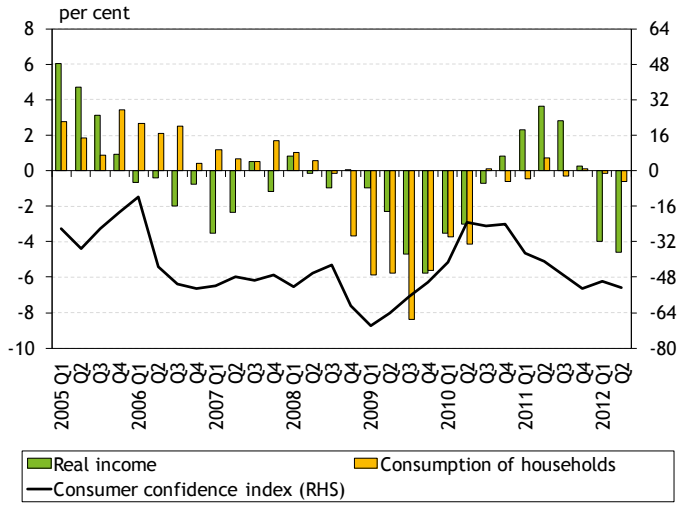
No substantial easing took place in the price conditions of household loans in 2012 H1 either, but the new conditions of the state interest rate subsidy may boost borrowing. Simultaneously with the early repayments, price conditions also became tighter as of end-2011, and, although with some minor adjustment, they practically remained

Chart 28: Annual percentage rate of charge (APRC) of new HUF loans to households



Source: MNB.

Chart 29: Changes in real income and consumption on a year-on-year basis and the consumer confidence index



Sources: CSO, GKI and MNB.

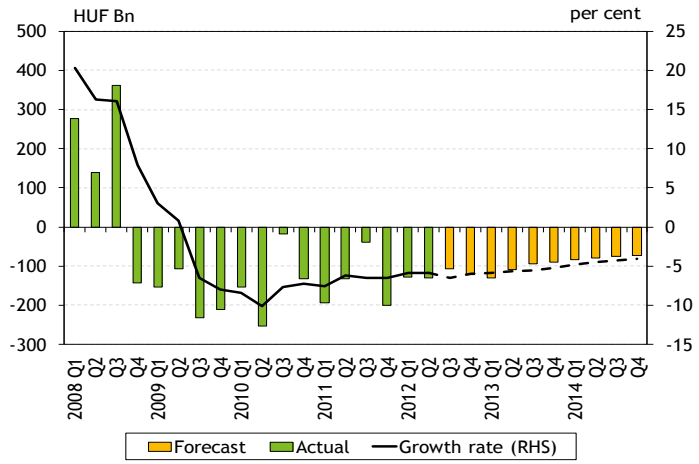
unchanged in 2012 H1 as well (Chart 28). As a result, in June spreads on forint housing and home equity loans exceeded the average of the period preceding the early repayments by approximately 1.5 percentage points. These developments in credit conditions cannot be separated from the other additional risks that arose due to the early repayments and affect the loans outstanding, but the risk premium included in the interest rates is only returning to the earlier levels at a slower pace. A slight decline in interest rates was observed in June, and looking ahead banks are planning to reduce their interest rate spreads as well. The shift in credit conditions may be supported by the amended system of conditions of the state interest rate subsidy as well. With the termination of the difference between the earlier interest rate ceiling and the market interest level, clients may use the subsidised schemes at an average interest rate level of approximately 9 per cent during the five years of the subsidy. Accordingly, the effective forint interest to be paid is roughly close to the 2010 levels, and is expected to result in an increase in new disbursements.

The cyclical factors determining credit demand deteriorated in 2012. The deterioration in the economic environment is clearly reflected in the case of households as well. Real wages have been declining at a faster pace practically since the beginning of the year and as a result, consumption also contracted in both quarters (Chart 29). In addition, the household confidence indicator has been steadily declining since end-2010. All of this reflects the deterioration in households' income position and a strengthening of precautionary considerations; jointly, they have a negative impact on credit demand.

Deterioration in external and domestic circumstances justifies a revision in lending forecasts

Expectations worsened in corporate lending. Although the liquidity tensions with a negative impact on the lending capacity of the banking sector have eased since our last report, banks' portfolio quality continued to deteriorate, and in addition, banks' tax burden increased further; these are jointly leading to a decline in willingness to lend, which may be exacerbated by the pass-through of the transaction tax as of 2013 (Box 5.). The worsening economic outlook has a material impact

Chart 30: Forecast for net quarterly changes in corporate loans



Source: MNB.

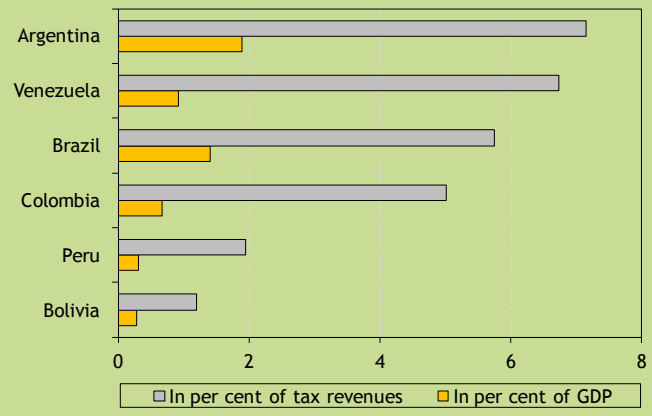
on corporate credit demand as well, resulting in a decline in expected borrowing. The above negative impacts may only partly be offset by declining funding costs as a result of the cuts in the central bank base rate. Taking into account of all these factors, our forecast for corporate lending has been revised downward: in 2013, domestic financial intermediaries' loans outstanding may drop by a total 5.3 per cent, and a further 4.1 per cent decline is expected in 2014 (Chart 30).

BOX 5: INTERNATIONAL EXPERIENCES RELATED TO TRANSACTION TAXES

In international practice, three basic types of financial transaction taxes can be distinguished: financial transaction taxes (FTT) imposed on instruments traded by financial institutions globally or regionally and aiming at cutting back speculative financial transactions; financial activity taxes (FAT) imposed on the profit of financial institutions and on managers' bonuses; and bank transaction taxes (BTT) that mostly affect retail and corporate bank transactions. As far as we are concerned, the financial transaction tax planned to be introduced in Hungary in the near future can mostly be classified into this last category, i.e. among bank transaction taxes (BTT).

The use of BTTs is mainly widespread in developing countries, primarily in Latin America and Asia, for a rapid, temporary increase in fiscal revenues. However, due to the negative experiences accumulated in the meantime, in the period after 2005 many Asian and South American countries terminated BTT-type taxes or replaced them with another type of tax.[23] As far as we know, at present Argentina, Bolivia, Colombia, the Dominican Republic, Mexico, Peru, Pakistan and Sri Lanka are still using this type of tax.

BTT revenues in some Latin American countries



Source: Coelho (2009).
Note: 2008 data, except for Brazil. 2007 data for Brazil (central government only).

Considering the practice of developing economies, it can be established that this tax is typically imposed on bank deposits, transfers, cash withdrawals and credit transactions (similarly to a consumption type tax), although both the basis and the magnitude of the tax vary considerably. At the same time, a common trend is that following introduction – primarily due to many negative experiences (increase in foreign account turnover and the use of cash, etc.) – an increasing number of transaction types were taken out from the scope of this tax (interbank transactions, transactions between the accounts of the same person, transactions related to wages and social benefits). The tax rates applied vary significantly across countries: at present, they range between half per thousand and 3 per thousand of the amount of the transaction, but earlier they reached 1.2–1.5 per cent in several countries. As the holdings serving as tax base are rather high (bank account turnover, deposits, etc.), this tax revenue reaches some 1–7 per cent of the total tax revenue (or 0.2–1.9 per cent of GDP).

[23] Of the South American countries, Brazil, Paraguay and Venezuela terminated the BTT, whereas in Asia and Oceania it was Australia, India and Papua New Guinea that did the same (2009 data). In Brazil, following the 2010 elections the idea of the reintroduction of this type of tax was brought up, but – as far as we know at the moment – it has not been done yet.

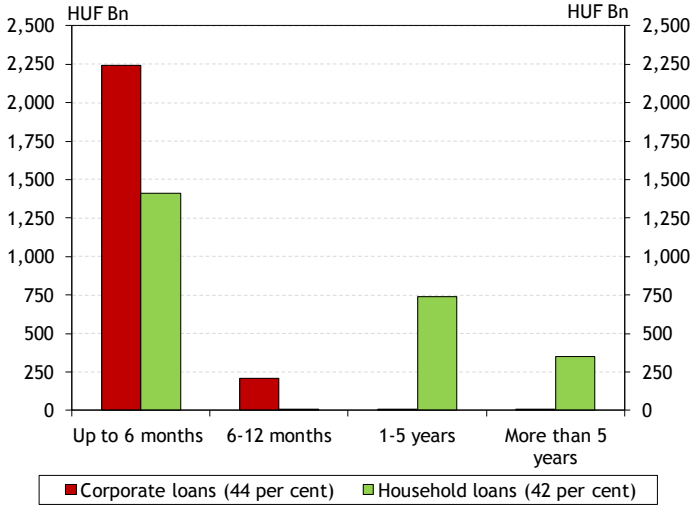
As of 1 January 2013, a financial transaction tax (BTT) is expected to be introduced in Hungary as well. The tax will be paid by the payment service providers. According to the information presently available to us, as a general rule, they will have to pay a tax corresponding to 2 per thousand of the amount of each transaction, but not more than HUF 6 thousand. Interbank transactions, the transactions of the MNB, transactions related to the securities account, operations related to loan transactions and most of the so-called corporate cash-pool transactions are expected to be exempted from the tax. A higher, 3 per thousand tax rate is planned to be applied to cash transactions. The Government expects to collect additional fiscal revenues amounting to some 0.5 per cent of GDP (1.4 per cent of the tax revenues) from this tax.

Although the Hungarian BTT may provide rapid fiscal revenue, its negative feature is that it 'throws sand' into the operation of financial institutions. In relative terms, it makes financial transactions more expensive, so it may impair the efficiency of financial fund allocation.[24] If the bank cannot pass the costs on, its ability to produce income declines, also resulting in lower willingness to lend. By contrast, if the banking sector is able to pass the tax on, by doing so it may make the prices of products and services higher (generating inflation), and corporate and household clients may react to it by changing their payment practices. This may result in an inefficient structure, which may even strengthen the black economy.

At the same time, according to the Hungarian regulation, the tax would not apply to the transactions that are the most critical and the most 'mobile' (easy to relocate abroad) from the perspective of the economy, and an upper limit is also determined for the tax to be paid. This presumably reduces the disintermediary effect of the transaction tax to some extent. In addition, the planned regulation would punish the use of cash, which is overwhelmingly expensive in terms of social costs, with a higher tax rate, which may also have favourable external effects if banks charge it to cash transactions.

Accordingly, on the whole, the Hungarian financial transaction tax, which can be considered rather unique in developed countries, may have negative effects. The higher the tax rate and the longer this burden remains in place, the stronger these negative effects are.

Chart 31: The distribution of the loans outstanding of banking sector by repricing periods (2012 H1)

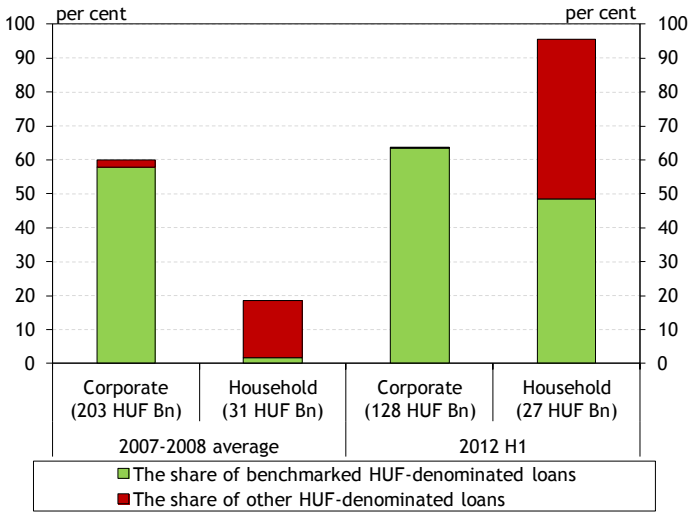


Note: Data in parenthesis show the share of HUF denominated loans.
Source: MNB.

In the corporate segment, cuts in the central bank policy rate may pass through to lending rates within short time. Considering the assumed effect of policy rate cuts, it is worth noting that the share of HUF-denominated loans in the outstanding portfolio amounts to around 50 percent, while in the case of new disbursements it has increased to 65 percent since the start of the crisis. In addition, the relatively large proportion of loans tied to reference rate results in a complete re-pricing of the 90 percent of the corporate portfolio within 3-6 months (Chart 31). During the maturity, interest rate spreads are fixed, and thus cuts may appear effectively and quickly in nominal interest rates. However, it depends on banks' business decisions, whether and to what extent this benefit from the decreasing funding costs is shared between lenders and borrowers through new disbursements. Nevertheless, in the last couple of years, banks rather used their non-price conditions (not interest rates) as a means

[24] According to Kirilenko – Perry (2004), this meant a deadweight loss amounting to 0.5 per cent of GDP on average in the South American countries under review. K irilenko, Andrei - Victoria Perry (2004): On the financial disintermediation of bank transaction taxes, International Monetary Fund, Washington, DC. According to Albuquerque (2006), the BTT – aptly called 'BAD tax' (bank account debit tax) by him – generated a deadweight loss equalling 0.2 per cent of the GDP of Brazil. Albuquerque, Pedro H. (2006): BAD taxation: Disintermediation and illiquidity in a bank account debits tax model, International Tax and Public Finance, 13:5, pp. 601-624.

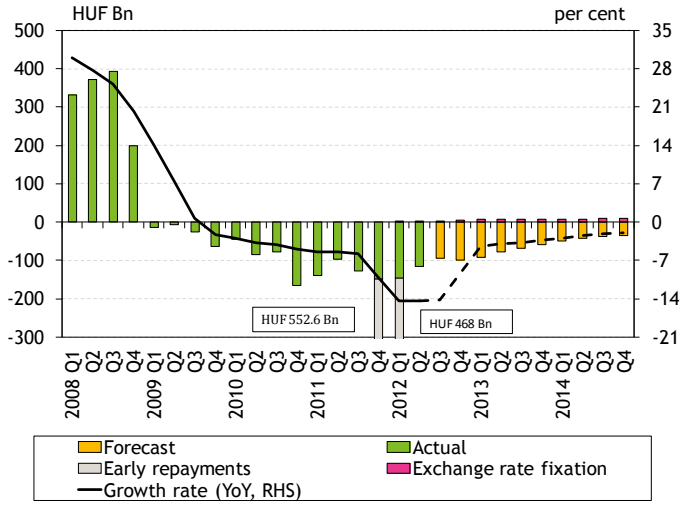
Chart 32: The share of HUF-denominated loans tied to reference rate within total household and corporate new loan volumes



Note: In parenthesis, monthly average of new HUF-denominated loan volumes in the given period.

Source: MNB.

Chart 33: Forecast for net quarterly changes in household loans



Source: MNB.

of tightening, while interest rate spreads seemed to be more or less steady. Within new household lending the share of loans tied to reference rate is increasing (Chart 32).

The two-year collateralised loan tender has become more effective with the amendments in conditions. As of October, the central bank instrument introduced in March 2012 is operating with revised conditions. Overall, the amendment results in a significant easing: in the future, banks that use this facility have to maintain their level of corporate lending compared to the level of 30 June 2012 excluding commercial real estate loans ("modified corporate loan stock"), and within this category outstanding loans granted for refinancing may also be taken into account. The initial borrowing limit is 50 per cent of the modified corporate loan stock of the reference period, but may practically grow limitlessly by the additional amount stemming from the increase in the modified loans outstanding. The sanctioning of non-compliance with the conditions has also been eased. Thus, the amended framework of conditions serves to mitigate the undesirable effects of banks' deleveraging more efficiently, preventing a significant drop in corporate lending in the future.

Looking ahead, negative impacts are expected to slightly exceed positive ones in household lending. Deteriorating economic prospects have a negative effect on lending in the household segment as well: the steady deleveraging of households is exacerbated by the deterioration in the income position and a strengthening in precautionary considerations as well. Looking ahead, all of this point to a decline in households' credit demand. On the supply side, twofold developments can be observed. On the one hand, the state interest rate subsidy and the cut in the central bank policy rate may lead to a slight increase primarily in housing loans. Contrary to this positive effect, banks' rising tax burden may result in restrained credit supply. Concerning the joint effects of the above, the household lending forecast has been slightly revised downward: domestic financial intermediaries' household loans outstanding are expected to decline by 3.4 and 2.0 per cent in 2013 and 2014, respectively (Chart 33).

In the case of household lending, the reduction in the policy rate may have a more moderate effect. The potential effects of policy rate cuts on household lending are more constrained than in the corporate

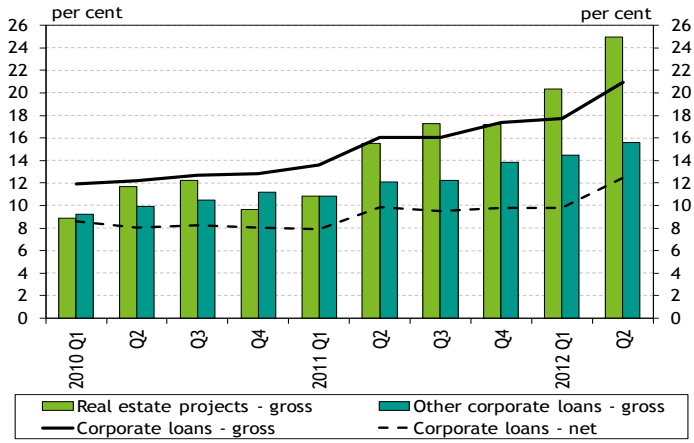
segment. The share of HUF denominated loans is only 40 percent within the overall household loan portfolio, in which only a half may be re-priced within 6 months. This is the consequence of the subsidised mortgage loan portfolio with a longer interest rate period and the substantial share of consumer loans with fixed interest rates. Although newly granted loans are denominated almost exclusively in HUF, with one half of these featuring a reference interest rate thanks to the transparent pricing regime introduced in April 2012, the volume of new disbursement is currently low.

3. PORTFOLIO QUALITY – The rising share of non-performing loans and the extended nature of the crisis add to the risk of inadequate loan loss coverage

The share of non-performing loans continued to increase both in the corporate and household segments during the first half of the year. In the case of corporate loans, this was mainly attributable to actual portfolio deterioration, whereas in the case of household loans the contraction in the outstanding stock due to the early repayment scheme also markedly worsened the NPL ratio. Loan loss provisioning decreased slightly in both cases, reflected in the moderate decline in loan loss coverage. In view of the steady rise in the level of non-performing loans, adequate loan loss coverage is increasingly important. It reduces funding risks as well as the risk that in the case of a shock the banking sector would suffer extreme losses. Mainly in the case of project loans and restructured foreign currency mortgage loans, loan loss reserves and the value of collateral indicate inadequate coverage, in an international comparison as well. Therefore, it would be necessary to revise loan loss provisioning rules and collateral assessment.

No sign of a turnaround has been seen in the portfolio deterioration on the corporate side since the beginning of the crisis. Given the lack of portfolio cleaning and the contraction in loans outstanding, the NPL ratio is not expected to decline over the two-year forecast horizon, but slower growth is likely. On the household side, the start of debtor assistance programmes may help to arrest the deterioration in portfolio quality in the coming two years. The share of non-performing loans within total loans is expected to peak at end-2013. At the same time, declining trends are expected in loan loss provisioning in both segments assuming that no additional loan loss provisioning is set aside on outstanding non-performing loans, thus coverage remains insufficient.

Chart 34: Share of non-performing corporate loans of the banking sector

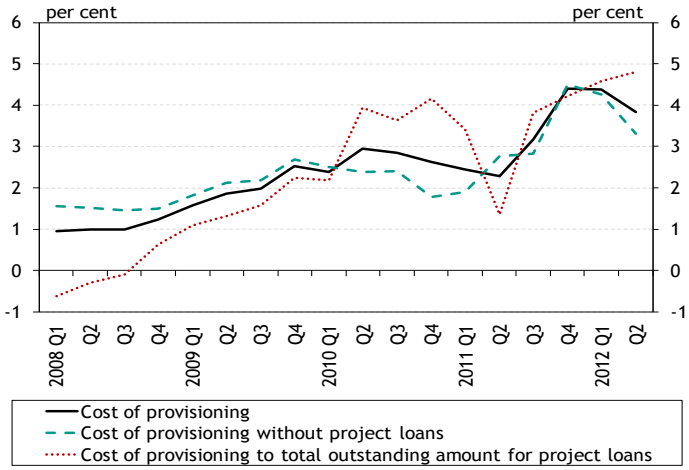


Note: Columns by contracts, whereas the share within total loans is shown by clients. In the case of the net NPL, the loans were taken into account at net value, i.e. loan loss provisioning was deducted from the gross values.
Source: MNB.

Continuing deterioration in portfolio quality

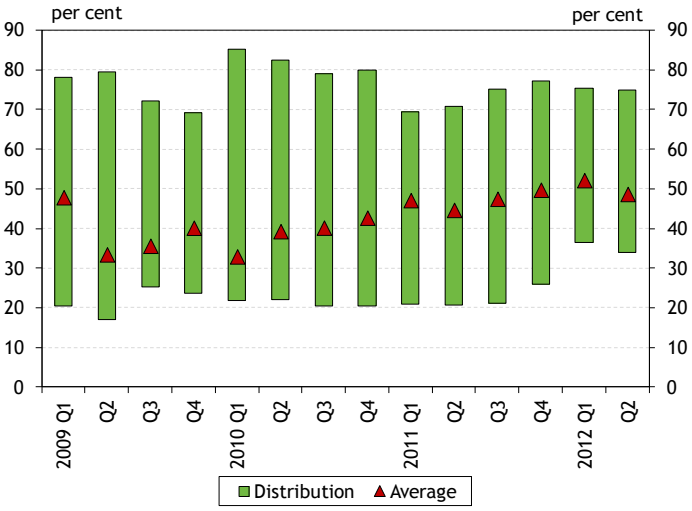
Over the first half of this year, the share of non-performing loans within the corporate portfolio continued to rise. The share of non-performing corporate loans in the portfolio has been rising strongly since the start of the crisis (Chart 34). Due to the drastic fall in domestic consumption, the poor state of the economy affects companies active on the domestic market particularly severely. Project loans, representing a substantial, more than 20 per cent share of banks' corporate loans, are mostly related to domestic real estate investments; therefore, the weakness of the domestic market is determining their performance. With the drawn-out nature of the crisis, more and more of these loans are inevitably becoming non-performing. During the first half of the year, the rising share of non-performing loans to total

Chart 35: Cost of provisioning to total loans in the corporate segment



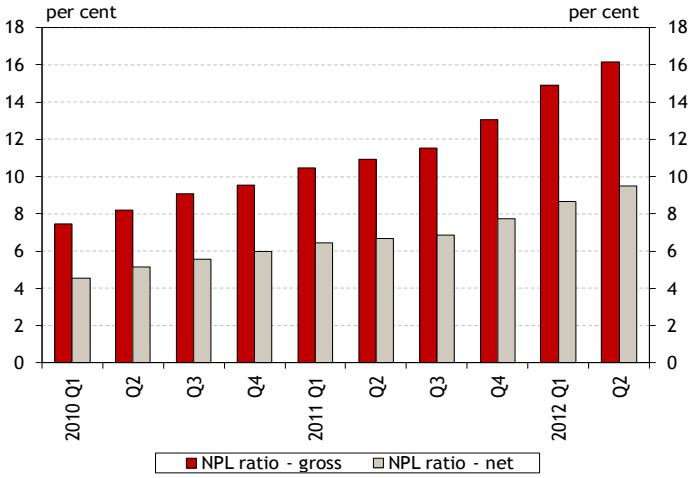
Source: MNB.

Chart 36: Loan loss coverage of non-performing corporate loans



Source: MNB.

Chart 37: Share of non-performing household loans in the banking sector



Note: In the case of the net NPL, the loans were taken into account at net value, i.e. loan loss provisioning was deducted from the gross values.
Source: MNB.

loans was primarily attributable to such loans. As a result, by the end of the first half of the year the NPL ratio exceeded 20 per cent, reaching as much as 25 per cent in the case of project loans. With respect to corporate loans as a whole, taking account of the net value of non-performing loans, the ratio is around 12 per cent. This means that 12 per cent of the portfolio comprises non performing loans not backed by loan loss reserves.

Following the strong loan loss provisioning at the end of last year, loan losses declined somewhat in H1. At end-2011, due to the gloomy economic outlook, banks implemented vast amounts of provisioning, raising the cost of provisioning above 4 per cent. This indicator declined to some extent in the first half of this year, but the value of 3.8 per cent continues to be historically very high. Similarly to developments in non-performing loans, differences can be observed across segments here as well. The worse performance of project loans entailed greater loan losses in H1. Other corporate loans tilted the indicator downwards (Chart 35).

Loan loss coverage of non-performing loans slightly declined by June 2012. Despite an increase in the non-performing portfolio, the cost of provisioning declined in H1, as reflected in loan loss coverage as well. Although at individual level the bank with the worst performance improved coverage, at the system-wide level the indicator declined to 49 per cent from the 51 per cent observed at end-2011 (Chart 36). In recent years, we observed similar trends in the second quarters, i.e. the share of non-performances within total loans of banks increased markedly, while coverage declined. Therefore, due to the seasonality, the current shift in itself does not pose a high risk.

In 2012 Q2, portfolio quality continued to deteriorate in the household segment as well. Within household loans, the ratio of loans 90 days past due increased from 13 per cent to above 16 per cent in half a year (Chart 37). This increase was partly the technical effect of the contraction in loans outstanding as a result of the early repayment scheme. This change in the denominator by itself added more than 1 percentage point of deterioration in the NPL ratio this year. However, the increase was high even apart from that. The favourable effect of the state programmes had not yet materialised during H1, as the purchases by the National Asset Management Agency were not launched yet, the

conversion of non-performing loans into forints mostly occurred in Q3, and the applications to the exchange rate cap scheme fell behind our earlier expectations to date (Box 6). Re-defaults of restructured loans outstanding also played a significant role in the increase. More than 30 per cent of the restructured loans are non-performing, and in spite of the continued increase in the renegotiated loans outstanding, there was no material change in the ratio of performing restructured loans. Taking into account the net value of non-performing loans, the NPL ratio also increased, but remained between 9–10 per cent.

BOX 6: GOVERNMENT MEASURES TO REDUCE THE AMOUNT OF PROBLEM HOUSEHOLD LOANS AND THEIR EFFECTS

A programme package was prepared on the basis of the agreement concluded between the Government and the Hungarian Banking Association in December 2011, aimed at solving the problems of foreign currency mortgage loan borrowers. The details of the programme package were discussed in both the April *Report on Financial Stability* and last December's *Quarterly Report on Inflation*. Therefore, only a brief review of the changes since spring is presented here.

Foreign currency mortgage loans outstanding (31.08.2012)	3,705 HUF Bn	
Debtors more than 90 days past due (30.06.2012)	754 HUF Bn	
Restructured, still performing loans (30.06.2012)	514 HUF Bn	
End-August 2012 status	Exchange rate limit	Conversion into forints
Loans eligible for the given programme:*	2,951 HUF Bn	126 HUF Bn
Participants in the programme:	468 HUF Bn	23 HUF Bn
Participation ratio (pre cent):	15.9%	17.5%
MNB forecast for the final participation ratio (per cent):	70%	-

*For the exchange rate limit, loans in a default of less than 90 days were considered eligible, even if they were restructured. Although a precondition of participating in the programme is that the client should not be in default, these loans can easily be made eligible. Upon the conversion into forints, not cancelled loans in an at least 90-day default on 30 September 2011 were considered

I. Exchange rate cap. Foreign currency mortgage loan debtors without arrears outstanding longer than 90 day may enter the exchange rate cap scheme until 31 December 2012.[25] Participating debtors may pay their instalments at fixed exchange rates – HUF/CHF 180, HUF/EUR 250 and HUF/JPY 2.5 – until 30 June 2017. Out of the difference, the interest part is paid by the state and the lender, whereas the principal part is accumulated on a technical account of the borrower (technically financed by a HUF-denominated loan). Early application is a rational decision for all eligible debtors, as they would receive transfers from the state and the bank, without waiving any rights. In addition, the earlier they enter, the longer they receive the transfer. Nevertheless, by end-August 2012 a mere 16 per cent of eligible borrowers had applied. Even accounting for the fact that the programme was opened for all groups of debtors only as of 1 September, the ratio is lower than the earlier expectations of the MNB. The underlying explanation may be that the scheme is relatively complicated, and the principal part entails new borrowing as well, deterring an increasing number of people in view of the negative experiences of the crisis. As a matter of fact, debtors do not undertake any significant additional risk by participating, if they save the principal part. Altogether, an increase in participation is anticipated in the coming months, but the

[25] More exactly, those debtors whose default is not more than 90 days, and a further condition is that the borrowed amount did not exceed HUF 20 million upon borrowing and the debtor is not in a payment easing programme.

participation ratio may be 70 per cent, as opposed to the 90 per cent projected earlier. This instrument is expected to be suitable for considerably decelerating any further credit quality deterioration of foreign currency mortgage loans.

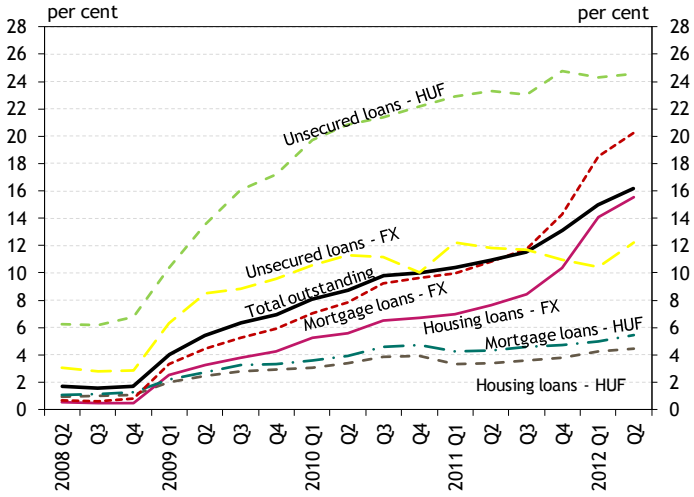
II. Conversion of non-performing foreign currency mortgage loans. In the case of foreign currency mortgage loans more than 90 days past due on 30 September 2011 (by at least HUF 78,000), by 15 May 2012 debtors were entitled to request their respective banks to convert their loans to forints at the average MNB exchange rates between 15 May and 15 June (HUF/CHF 248.5, HUF/EUR 298.6 and HUF/JPY 2.99). Banks had to cancel 25 per cent of the debt converted into forints, but were allowed to deduct 30 per cent of the resulting loss from the 2012 bank levy. However, in line with our expectations, this programme was only able to offer a solution for a small portion of borrowers. Firstly, the conditions of the programme were strict: the value of the client's real estate upon borrowing could not exceed HUF 20 million; and in April 2012 the programme was tightened slightly.[26] Secondly, despite the 25 per cent debt cancellation, the programme would have been unable to considerably reduce clients' debt servicing burdens, as the higher interest rates of the new forint loans offset the debt cancellation (the related state interest rate subsidy, which is available only for a limited number of clients, could only result in temporary easing). Accordingly, this scheme was able to provide assistance to debtors where foreclosure seems to be the real solution: following the auction sale of collateral and the repayment of the loan, the debtor has more money / lower debt for a restart as a result of the debt cancellation. Consequently, few debtors applied to this programme, and by the statutory deadline of 31 August, credit institutions converted foreign exchange loans amounting to HUF 23 billion (around 3,100 loans). Therefore, this instrument failed to markedly improve the high non-performing loan ratio.

III. National Asset Management Agency. The National Asset Management Agency purchases and lets back at a price determined by law the properties of debtors raising at least one child and receiving some sort of social benefits. The transaction requires the consent of both the debtor and the lender(s). The purchase price of the property is spent on honouring the creditor(s) claims, whereas the pledgee financial institution(s) renounce(s) any possible claim that might additionally remain on the debtor. During the summer, all of the legislation for the operation of the National Asset Management Agency was adopted, and the conditions of participation were also eased (previously, two dependants had been the eligibility criterion). Hence, the properties transferred to the National Asset Management Agency will not be included in the auction quotas either. As the necessary legislation entered into effect only at the beginning of the summer, and then banks also had to conclude contracts with the National Asset Management Agency, only a few real estate purchases have taken place to date. Accordingly, in our opinion it is unlikely that the National Asset Management Agency will succeed in taking over the 8,000 properties designated for this year. However, the unused portion of this quota can be carried over to next year. Nevertheless, it is still doubtful whether there will be a sufficient number of troubled debtors who can meet all the conditions of participating in the programme.[27] Therefore, a further easing in the conditions may be necessary in the future so that the National Asset Management Agency can utilise the complete quota (25,000 properties) available until 2014. Nevertheless, the programme may be suitable for solving the problem of the socially most needy, as the rents determined by the National Asset Management Agency are low (an annual 1.5 per cent of the value upon borrowing of the flat taken over). It is also advantageous that the properties taken over by the National Asset Management Agency are not included in the auctioning quota, and as the clients planned to be taken over until 2014 account for nearly 20 per cent of non-performing mortgage loan debtors at present, this may considerably accelerate banks' portfolio cleaning.

[26] Accordingly, banks were obliged to offer the conversion scheme only to debtors whose contracts had not yet been terminated. However, banks were still entitled to enter into such agreements with debtors whose contracts had been terminated, and 30 per cent of the 25 per cent debt cancellation could be deducted from the bank tax in these cases as well.

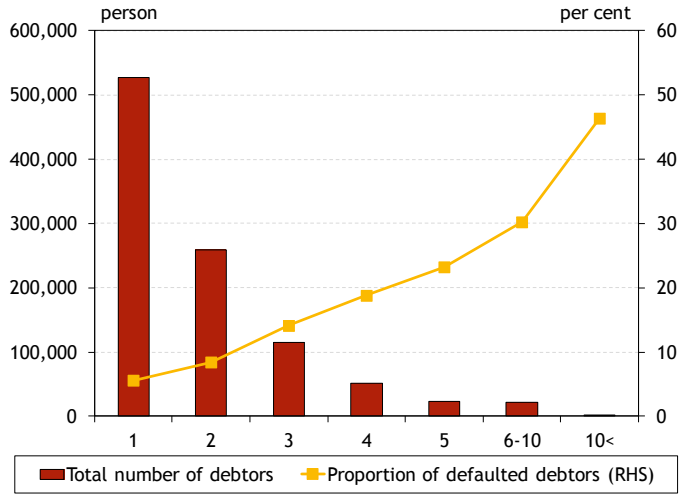
[27] Probably, it is the criterion concerning the number of children (at least 1 child in the household) that can be met by as many debtors as the total capacity of the National Asset Management Agency (25,000 properties by 2014). However, for the time being we do not have any information on the number of those who meet the condition of receiving social benefits (as this information is not available for commercial banks either).

Chart 38: Ratio of non-performing household loans by products in the banking sector



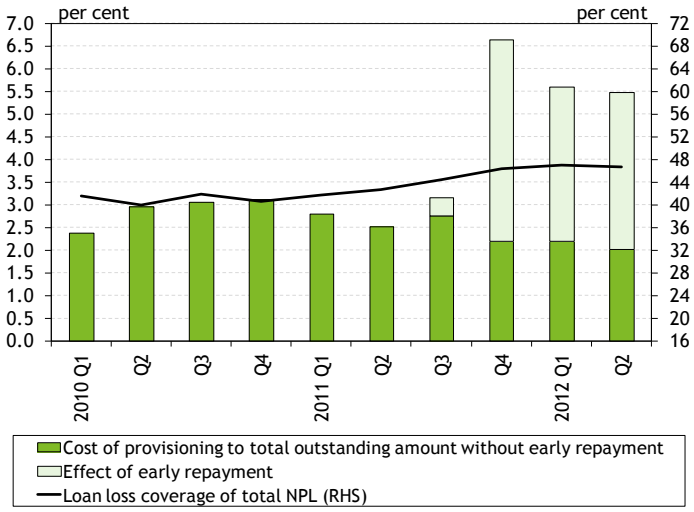
Source: MNB.

Chart 39: Distribution of mortgage loan debtors according to number of contracts



Source: Central Credit Information System.

Chart 40: Cost of provisioning to total loans and loan loss coverage in the household segment



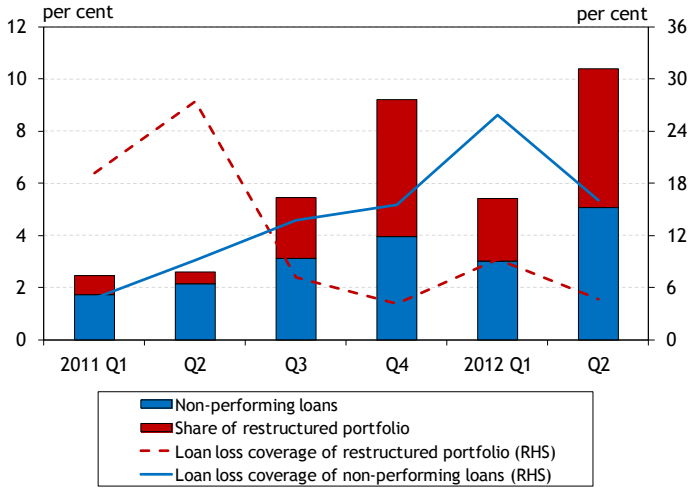
Source: MNB.

The weakness of the exchange rate of the forint against the Swiss franc continued to affect household portfolio quality. The examination of individual products reveals that the significant portfolio deterioration mainly affected foreign currency denominated products (Chart 38), although the dynamics is partly explained by the early repayment scheme here as well. At the same time, in the case of forint loans only slight deterioration has been observed in the NPL ratios, while their level in the case of mortgage loans, which constitute a major share of household loans, is significantly lower. Accordingly, the launch of the exchange rate cap may contribute to containing deterioration.

The complete credit registry system may result in an improvement in transparency and in a decline in excessive indebtedness. Since May 2012, records of the reference data of household debtors have become complete in practice as well in the Central Credit Information System (so-called positive debtor list), which had been advocated by the MNB for a long time. Indisputably, the new system entailed improved transparency: namely, current data reveal that 90,000 out of the roughly one million mortgage loan debtors in Hungary are in default with one of their loans, and default propensity is higher among borrowers with more than one loan contract (Chart 39). The debtor's ability to handle the burdens declines with an increase in indebtedness, resulting in a greater probability of default. Therefore, with an improvement in transparency, in the future the 'positive debtor list' may contribute to the prevention of borrowers' excessive indebtedness, thereby preventing multiple defaults of their loans.

The cost of provisioning as a proportion of total loans did not change significantly in H1. As a result of the early repayment scheme, banks suffered considerable losses on the household portfolio, and thus the actual cost of provisioning surged to extreme level as of end-2011. However, disregarding the effects of the early repayment scheme, following a slight decline in Q2, the value of the indicator hardly exceeds 2 per cent, which corresponds to the levels observed in 2009 (Chart 40). Lower loan loss provisioning also had a slightly negative impact on the coverage of the non-performing household portfolio. Maintaining high loan loss coverage is important in terms of financial stability as well, so that banks can withstand a price fall in collateral values.

Chart 41: Portfolio quality indicators of the local government sector



Source: MNB.

In the local government sector, the ratios of non-performing and restructured loans continue to rise; however, the increase in provisions does not keep pace with the expansion in the stock of restructured loans. Apart from the one-off effect of the decline in the stock of troublesome loans by the first quarter of 2012 after the Government assumed the debts of county governments, the ratios of non-performing and restructured local government loans are increasing steadily (Chart 41). The ratio of provisions set aside by credit institutions to the stock of troublesome loans is at its level at the end of 2011, implying that the loan loss coverage ratio for non-performing loans appears to be stabilising at below 16 per cent and that for restructured loans at below 5 per cent. Provisions appear to insufficiently cover restructured loans, as the majority of banks active in the sector do not make provisions against restructured loans at all. However, the latest Government measures may alter significantly our view of the banks' claims on the local government sector(Box 7).

BOX 7: GOVERNMENT MEASURES IN ORDER TO SETTLE THE DEBT PORBLEM OF LOCAL GOVERNMENTS

According to the Government's plans made public at end-October 2012, the state will continue to consolidate the local government sector, and will assume further debts from local authorities. The newly announced measures may considerably contribute to the easing of financial tensions in the sector. Before describing the package of measures, we think it is necessary to review the liabilities of local governments vis-à-vis the banking sector.

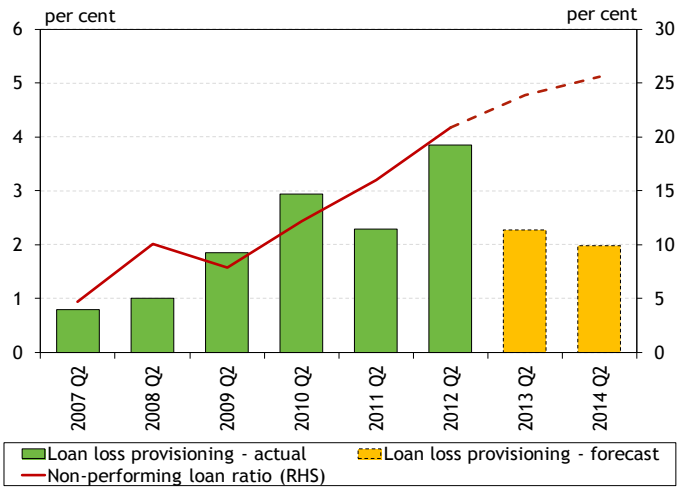
Total accounts receivable of the banking sector from local governments nearly doubled in the two year preceding the crisis. However, net exposure of the sector to the banking system started to deteriorate only in 2010. This was mainly attributable to the fact that local governments deposited funds at banks, but in 2010 they started to withdraw their deposits. Seventy-five per cent of bonds outstanding, which account for nearly half of the debt, are denominated in Swiss francs, and another 15 per cent is denominated in euro. Accordingly, the weak exchange rate of the forint resulted in a significant increase in local governments' debt to the banking sector. As the interest rates of foreign currency denominated bonds are mainly tied to reference rates (CHF LIBOR, EURIBOR), the negative effect of the weak forint exchange rate is partly offset by the decline in reference rates to a historically low level. However, this is only true for interest payments; the appreciation of the Swiss franc appears in principal repayments entirely. This is particularly risky as repayments of bonds usually start after a grace period of several years, a significant portion of which will expire over the coming one year. While in early 2012 half of the bond-related grace period expired, 90 per cent of bonds will be in the repayment period by end-2013.

The Government has already taken various measures to put the financial position of the local government sector in order. First, at end-2011 it assumed some HUF 170 billion of debt from county local governments, resulting in an easing of tensions related to the financial management of county local governments, which were in the most stressed position due to their limited room to collect revenues. Second, in January 2012, a statutory regulation that limits borrowing by local governments was introduced, expected to prevent a further increase in debt. Pursuant to the new regulations, local governments may enter into transactions that result in debt only with the approval of the government. However, loans for advances or down-payment of development assistance obtained from international organisations, loans with a maturity of up to one year, reorganisation loans and loans not exceeding a value limit depending on settlement type are exceptions to the rule.

According to the latest information, the assumption of the debt of county local governments was only the first step in the consolidation of the sector: the Government is planning the assumption of more than HUF 600 billion, i.e. almost half of local governments' total debt of nearly HUF 1,300 billion in a differentiated manner. According to the already announced but not yet adopted government measures, the state will assume the total debt of settlements with less than 5,000 inhabitants; it means the debt of 1,673 local governments in excess of HUF 97 billion. The assumption of the debt of local governments with a higher population depends on the per capita local tax revenue of local governments. Where the per capita local tax revenue of the local government does not reach 50 per cent of the average of the sector, the state will assume 70 per cent of the outstanding debt (a total HUF 45.3 billion). In the case of a per capita local tax revenue between 50 and 75 per cent of the average of the sector the planned magnitude of the assumption is 60 per cent (a total HUF 79.4 billion), whereas in the case of a per capita local tax revenue between 75 and 100 per cent the state assumes half of the debt (a total HUF 145.1 billion). The state will assume 40 per cent (a total HUF 244.7 billion) of the debt of the local governments where the per capita local tax revenue is above the average. The assumption of debt does not influence the size of government debt, as – in line with accounting standards – it has to be calculated in a consolidated manner, together with the outstanding debt of the local government sector. Similarly, the general government deficit will also not be influenced by the planned measure.

A positive result of the debt assumption may be that it allows the arrangement of the financial management of excessively indebted local governments, and – complementing other measures that concern the sector (for example the limiting of borrowing) – it may prevent the rebuilding of debts. This may also be advantageous for the banks that lend to the sector. First, a decline in risks may also result in lower loan loss provisioning requirements; consequently, profitability may improve. Second, it will be an immediate effect that – in line with the Basel capital rule – the risk weights assigned to the government exposure are significantly lower than that of the local government exposure; accordingly, capital may free up to credit institutions.

Chart 42: Ratio of non-performing loans and the cost of provisioning in the corporate segment

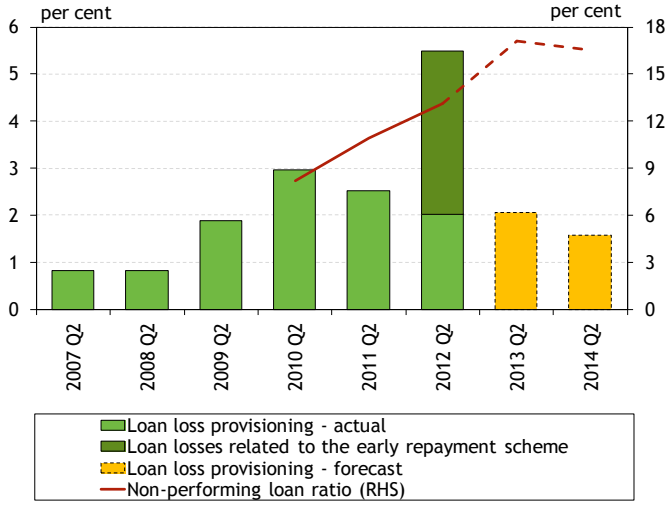


Source: MNB.

No turnaround is seen in the trend of the corporate NPL ratio over the forecast horizon

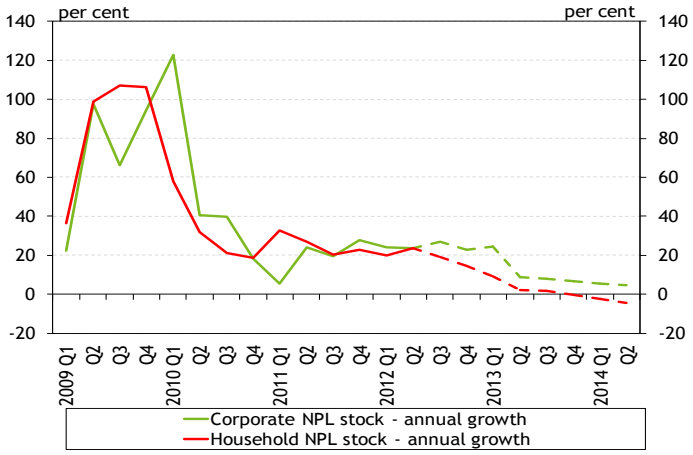
By the end of our two-year forecast period, more than one quarter of corporate loans may become non-performing. As regards corporate loans, we still cannot see any factors that could break the rising trend in the NPL ratio. The growth outlook remains weak, particularly for domestic consumption. Therefore, in the coming period no improvement is expected in the credit quality of large real estate projects and the SME sector, which are particularly sensitive to subdued domestic demand. Other factors with an impact on the NPL ratio are also not expected to change markedly. Portfolio cleaning continues to be sluggish, and the corporate portfolio will contract over the coming two-year period. As a result of this, the NPL ratio may rise above 25 per cent by mid-2014 (Chart 42). In the meantime, in line with the slower growth in non-performing loans, the cost of provisioning may be around the level of 2.5 per cent observed in earlier periods of the crisis, i.e. lower than the current outlier, assuming that no additional loan loss provisioning is set aside on outstanding non-performing loans.

Chart 43: Ratio of non-performing loans and the cost of provisioning in the household segment



Source: MNB.

Chart 44: Annual growth in non-performing loans in the banking system



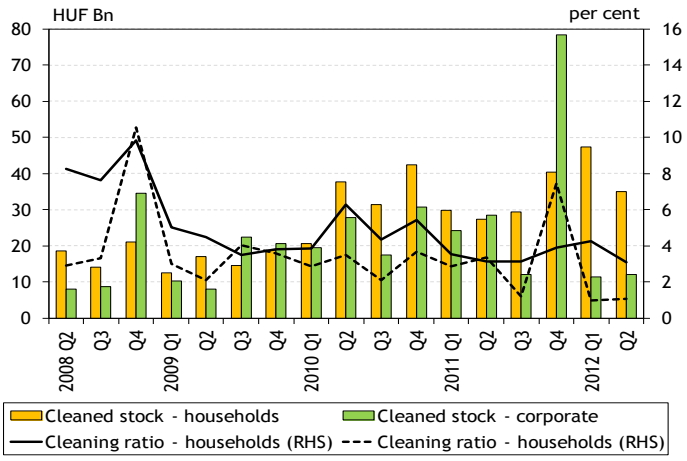
Source: MNB.

Steady deterioration in the household segment may be prevented by state programmes. By the middle of this year, the share of non-performing loans within the portfolio exceeded 16 per cent, but government programmes may help to curb the rise. The exchange rate cap may provide significant assistance for debtors with debt servicing difficulties caused by elevated instalments. Accordingly, the upper limit of HUF/CHF 180 reduces the probability of default of participants (our forecast is based on a 70 per cent participation ratio). In addition, conversion of a part of non-performing loans into forints together with partial debt cancellation may slightly improve the NPL ratio. Finally, the low portfolio cleaning ratio may be boosted by the actual start-up of the National Asset Management Agency, which plans to purchase 8,000 properties this year, and a further 7,000 next year and 10,000 in 2014 (our calculations are based on a more conservative estimate than these figures). In view of these factors, no significant increase in the NPL ratio is expected in the coming two years. The indicator may peak around 17 per cent in the middle of next year and may already decline to 16.5 per cent by the end of the forecast horizon. In parallel with an improving NPL ratio, the cost of provisioning may also improve. At the end of the two-year time horizon, the indicator may drop below the level of 2 per cent (Chart 43), assuming that no additional loan loss provisioning is set aside on outstanding non-performing loans.

In order to reduce risks, it is necessary to tighten loan loss provisioning rules and collateral appraisal

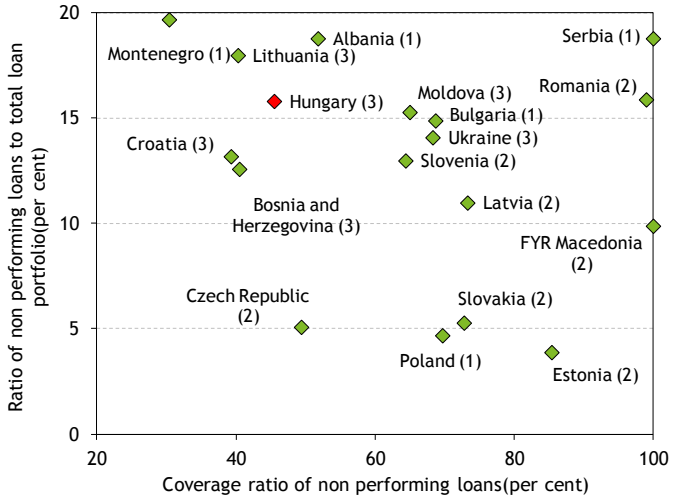
At present, in connection with portfolio quality the 'flow' problem poses a lower risk to financial stability. At present, managing the steadily rising, elevated NPL ratio poses the greatest challenge to the domestic banking sector. For an adequate assessment of the problem in line with its magnitude and severity, the ('flow') problem originating from the steady rise and the ('stock') problem stemming from the high outstanding amount of non-performing loans have to be separated. The increase in non-performing loans ('flow' problem) determines the size of the new loan loss provisioning requirement on newly impaired loans, directly reducing the earning potential of the banking sector. At the same time, we expect a material deceleration in the growth rate over our forecast horizon (Chart 44), which obviously entails a significant decline in required new provisioning.

Chart 45: Cleaning of non-performing loans of the banking sector



Source: MNB.

Chart 46: Proportion of non-performing loans and their loan loss coverage in the wider region



Note: The figures in parentheses indicate the reference period of the NPL ratio. 1 = 2011 Q4, 2 = 2012 Q1, 3 = 2012 Q2. Coverage data for Hungary: 2012 Q2; for the other countries the latest data for 2011 based on the EBCI report.
Sources: EBCI, IMF FSI, MNB.

The primary risk is the tremendous amount of non-performing loans outstanding ('stock' problem). The massive amount of non-performing loans has a negative impact on the banking system in several regards. Firstly, new provisioning requirements may arise on outstanding non-performing loans as well. A change in collateral value (for example due to a drop in real estate prices) or a larger exposure following forint depreciation in the case of foreign currency loans may warrant new loan loss provisioning. Non-performing loans weigh on profitability not only through loan losses, but also through refinancing costs, without having revenue on the assets. In addition to solvency problems, the high NPL ratio has a negative impact on banks' liquidity position as well. Financial institutions have to refinance the non-performing portfolio, and these liabilities have to be rolled over, which may also increase the maturity mismatch. In addition, a high NPL ratio may also weigh on banks' willingness to lend. Finally, NPLs may also have a negative impact in terms of reputation as well. Although the definition of the indicator varies across countries, and thus their levels are difficult to compare, investors still pay particular attention to it in their risk perception, which may be reflected in funding costs as well.

Reducing the NPL ratio should be a key objective. The NPL ratio could be reduced by accelerated portfolio cleaning (numerator declines) or a rebound in lending (an increase in the denominator). Portfolio cleaning is very sluggish in the Hungarian banking sector. At a quarterly level, 3-4 per cent of non-performing loans are cleaned out from bank books, which means that the total non-performing portfolio would be cleaned up in the banking system within 6-8 years (Chart 45). Therefore, cleaning must be facilitated in order to manage the problem, which makes close cooperation with financial institutions indispensable (Box 8). A pick-up in lending would also support an improvement in the NPL ratio. With an increase in lending, through the rise in performing loans outstanding, profitability could also improve. The significantly better indicators of neighbouring countries (Chart 46) are also partly explained by the much more favourable developments in lending.

BOX 8: MANAGING NON-PERFORMING LOANS IN BANKS' PORTFOLIOS

In September 2012, the MNB conducted a survey and interviews with commercial bankers active in the field of work-out. We reviewed work-out processes and sought answers as to why banks do not clear non-performing loans off their books more rapidly and how this process could be accelerated. The survey was conducted separately both for the retail and corporate business units.

Household portfolio

In the household segment, managing non-performing loans is significantly determined by state programmes, which were discussed thoroughly in Box 6. Here we only point out that in the programme of defaulted foreign currency denominated mortgage loan conversion combined with partial debt cancellation, some banks deviated from the market average with their strategies. These credit institutions offered the new forint loans to the defaulted borrowers with interest rates well below the market rate, and thus – together with the partial debt cancellation – the debt servicing burden could even have declined below the original sum. These strategies have been much more successful than what was generally observed in the sector.[28]

Another relevant state intervention is the auction quota scheme. Some of the responding banks reported that they could not completely utilise the quotas, as the market is unable to absorb even this limited number of properties. At the same time, the quotas may still be a limiting factor regionally or in the case of certain types of transactions, thus rethinking the geographical distribution of the quotas may be worth considering. In addition, the capacity of the credit management market is also strongly limited, and bid prices offered by credit management companies are very low. Therefore, at present, credit institutions mostly prefer to manage these problem loans themselves. Since legal enforcements are overwhelmingly costly and time-consuming, credit institutions usually strive to reach mutual agreement with their clients.

As for unsecured loans, portfolio cleaning mostly takes place through selling to credit management companies. A well-functioning system was developed for these types of transactions: banks usually compile transaction packages on a monthly or quarterly basis, and sell them through tendering, reaching around 10 percent recovery rate.

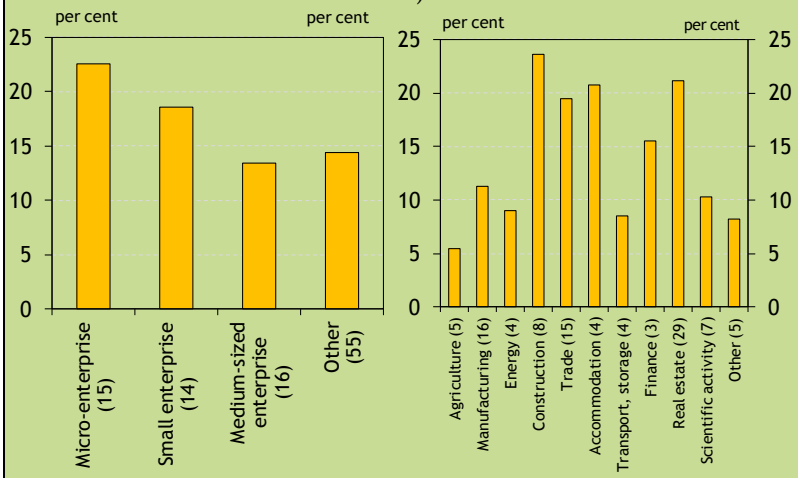
Overall, non-performing household loans being stuck on banks' balance sheets – mainly in the case of secured loans – is attributable to the legal framework and to the insufficient absorbing capacity of the credit management and real estate markets. Credit institutions basically consider return more important than the speed of portfolio cleaning. In the case of households, the relationship between non-performing loans and new lending is weak. Subdued lending is rather attributable to credit demand, though it is also the consequence of the weak economy, just as in the case of deteriorating portfolio quality. Accordingly, a decline in non-performing household loans in itself would not lead to rebound in lending.

Corporate portfolio

The breakdown of defaulted corporate loans by sector and company size was also analysed in the corporate loans section of the above survey on developments in work-out. Unsurprisingly, this shows that company size is inversely proportional to the frequency of defaults. As regards sectors, the NPL ratio is high mainly in sectors related to the commercial real estate market.

[28] Moreover, as these banks offered the conversion into forints also to their debtors who were 'non-mandatory' according to the programme, i.e. whose contracts had already been terminated, the ratio of participants was higher than in the case of banks concentrating only on the mandatory part of the programme.

Corporate NPL according to company size and sector (June 2012)



Note: The figures in parentheses indicate the proportion of the loans in certain categories to total corporate loans.
Source: 9 commercial banks participating in the MNB survey.

We collected data on the collateral for non-performing loans and on loan loss provisioning as well. The results show that the highest proportion of collateralised debts is, as expected, found in the case of real estate projects, and in the micro enterprises segment, where loans are typically backed by the private properties of entrepreneurs. Loan loss reserves on non-performing loans and the sum of collateral values exceed outstanding debt in most of the segments, with a few exceptions, including commercial real estate projects, which account for the majority of non-performing loans. This may indicate that loan loss provisioning is inadequate, but recovery naturally comes not only from the collateral but also from the client's cash flow.

When problem corporate loans can no longer be managed by restructuring, banks launch collateral enforcement procedures. The collection of claims are more often managed the credit institutions themselves in the corporate segment, and claims are sold more rarely, with typically the exception of small enterprise loans. Some banks even established separate real estate management organisations to manage the commercial property exposure stemming from problem corporate loans and project finance. Debt-to-equity conversions and the transfer of the equities into a venture capital fund may also occur in the case of more viable projects, although this is a rather rare solution.

Banks' responses reveal that portfolio cleaning is slow as credit institutions expect a higher return on keeping the transactions in the portfolio, and the related legal procedures – cases under dispute, liquidation, negotiations among creditors – are more sluggish and costly than in the household segment. Respondents mainly saw the relationship of high NPL ratio with new lending in that higher loan loss rates are built into the expected risk premium of new clients, and the uncertainty of the loss given default prompts banks to keep capital buffers high.

Proposals – How could work-out be improved?

1. Improving the legal environment. During our survey, credit institutions indicated that they see a number of further possibilities to strengthen creditors' rights and to accelerate collateral enforcement procedures. At the same time, of course, the balance between creditors' and debtors' rights cannot be lost either. In order to explore the possibilities in the improvement of the legal environment, it would be useful to set up a joint committee comprised of the government, creditors' representatives and the supervisory authorities. Due to the complex nature of the subject, only some examples are listed here:

- *Review of the tax and accounting legislation related to debt cancellation:* it would be worth it to consider easing the conditions of debt cancellation. Under certain conditions debt cancellation would not result in income for the debtor (i.e. no tax consequence), and could be booked as cost by banks (i.e. tax shield effect). This would add to the chances of an agreement between the parties.
- *Review of the operational frameworks of legal enforcements and liquidation proceedings:* although there have recently been positive changes with the amendments to bankruptcy and legal enforcement rules,[29] these seem to be insufficient. For example, it would be desirable to strengthen the motivation and accountability of bailiffs and liquidators and to improve these players' professional supervision and the transparency of their operation. Even the Act on Bankruptcy as a whole could be reviewed in connection with the entry into force of the new Civil Code in 2014.
- *Personal bankruptcy:* in line with earlier proposals of the MNB, we still believe that it would be worth

[29] For example, the increasing number of liquidators and the intended improvement in the transparency of ownership of liquidating companies.

considering creating a bankruptcy option for private persons, which also takes creditors' interests into account.

2. Transfer of non-performing loans into separate legal entities: in respect of some loan types, particularly project finance loans, the owners of domestic banks should be provided with incentives to separate out problem portfolio elements and continue to manage and finance them in a separate legal entity (a sort of 'bad bank'), thus capital needs for new lending and losses on outstanding debt could be better separated.

3. Tightening of loan loss provisioning rules: regulatory intervention is possible as well to accelerate portfolio cleaning. The present loan loss provisioning rules require the coverage of expected losses stemming from receivables by loan loss provisioning. These rules, however, may be combined with other aspects as well, similarly to practices of other countries: for example with the length of time elapsed since the default or with industry-specific loan loss expectations.

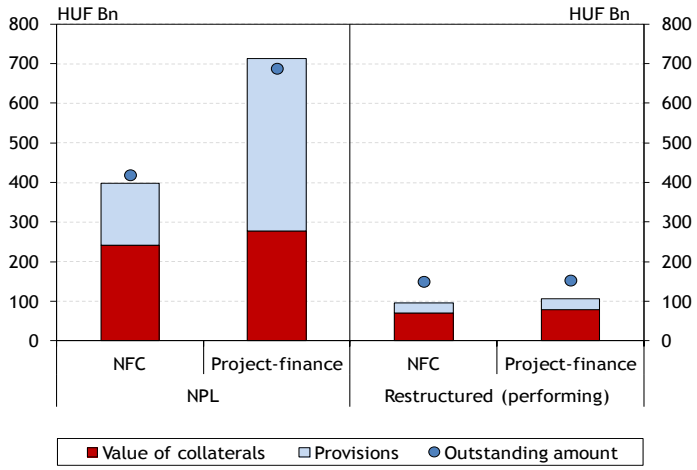
4. Tightening of collateral appraisal rules: In the household segment, the *appraisal* of residential real estate collaterals is mainly done on a statistical basis, using housing price indices. *Appraisal* with sampling or for the total stock may also take place. However, the frequency of *appraisal* varies significantly across banks. In the case of companies, external appraisers are more often used, whereas the frequency of *appraisal* is between 1 and 2 years. We consider the standardisation of collateral *appraisal* rules and the increasing of the frequency of *appraisals* crucial.

Table 3: Loan loss coverage in the corporate and household segments

Jun-12	Loans outstanding (HUF Bn)	Non-performing loans (HUF Bn)	Provisions (HUF Bn)	Loan loss provisioning coverage (per cent)
Corporate loans	**6 086**	**1 294**	**630**	**49**
Project-finance	1 681	419	157	37
Other loans	4 405	875	473	54
Household loans	**6 528**	**1 055**	**492**	**47**
from which:				
HUF mortgage loans	1 775	134	55	41
FX mortgage loans	3 592	716	273	38

Source: MNB.

Chart 47: Coverage of corporate loans of the banking sector, June 2012



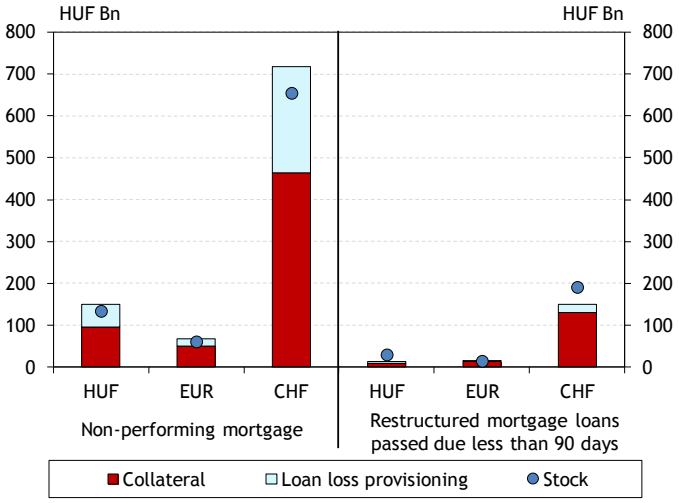
Source: MNB.

Due to the large amount of non-performing loans, loan loss coverage plays a key role. Firstly, higher coverage reduces the probability of further losses; secondly, it mitigates refinancing risks as well (Table 3). The collateral also reduces expected losses. At the same time, determining their real values poses challenges, in particular when the NPL ratio is overwhelmingly high. In this case, banks are able to sell collaterals with increasing difficulties and at distressed prices. This may considerably divert the actual sales price from the expected one.

Project loans are likely to have inadequate coverage. In the case of non-performing project loans within the corporate segment, the sum of collateral and loan loss reserves is slightly lower than the exposure (Chart 47). This may require further provisioning, particularly if the value of collateral is based on optimistic expected return calculations. Inadequate coverage is also observed in the case of restructured, but still performing project and other corporate loans. This may be a peril particularly in the case of project loans, where repeated debt restructuring ('evergreening') is common, and often the objective is to postpone facing the problems, instead of restoring solvency.

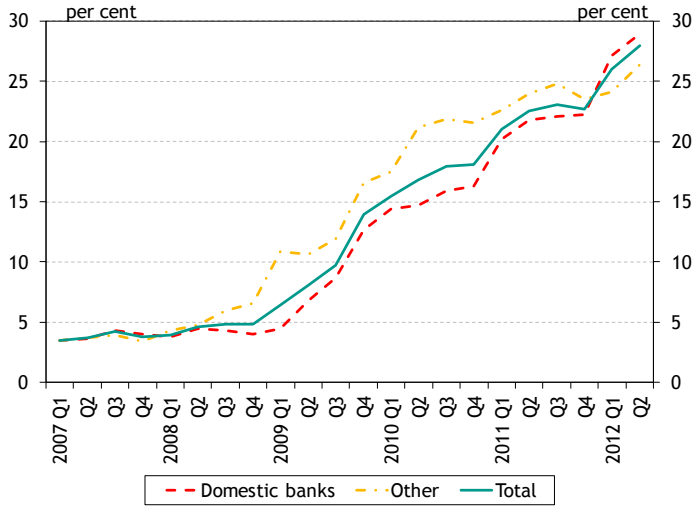
In the household segment, adequate coverage of restructured foreign currency mortgage loans is doubtful. In the case of the outstanding non-performing mortgage loans, the total size of collateral and loan loss reserves is higher than the total exposure, which – theoretically – may imply that no additional provisioning will be required. However,

Chart 48: Coverage of mortgage loans of the banking sector, June 2012



Source: MNB.

Chart 49: Ratio of non-performing loans at financial enterprises by ownership structure



Note: Domestic banks category includes all financial enterprises owned by banks registered in Hungary.

Source: MNB.

the picture is refined by several factors. Depreciation of the forint may raise the size of the loan compared to the collateral value. In addition, the exact value of collateral is also uncertain, due to its relatively infrequent appraisal. However, the collateral is often taken into account with a sizeable 'haircut'. Nevertheless, in the case of restructured mortgage loans past due less than 90 days, the exposure exceeds the value of the collateral and the loan loss reserves, particularly in the case of the Swiss franc loans (Chart 48). The difference may pose a risk, as the performance of restructured loans is deteriorating steadily.

In order to mitigate risks and accelerate portfolio cleaning it is necessary to tighten loan loss provisioning and collateral appraisal rules. Based on the above arguments, banks presumably use restructuring not only for the improvement of solvency, but also for smoothing the booking of the necessary loan loss provisions. However, with a deteriorating economic environment this may result in a shock-like appearance of tensions in the portfolio. In order to avoid this, the issue of revising loan loss provisioning and collateral appraisal rules should be addressed again.

Deteriorating portfolio quality at financial enterprises, stagnation at cooperative credit institutions

The portfolio quality of financial enterprises deteriorated considerably in H1. At end-2011, some deceleration was perceived in the rise of non-performing loans to the total portfolio. However, this did not represent a real turning point. The share of NPLs within the portfolio increased significantly during the first half of the year. At end-June, the indicator was close to 28 per cent (Chart 49). Simultaneously, the cost of provisioning also increased from 3.5 per cent at the end of the year to 3.7 per cent at mid-year. This was reflected in the coverage as well. Following a 3 percentage point rise, the loan loss coverage reached 62 per cent. It is notably higher than in the banking sector, although at the same time it has to be taken into account that collateral coverage is significantly lower in the portfolio of financial enterprises than in that of banks.

The credit quality of household loans improved in the portfolio of cooperative credit institutions, while a slight deterioration was observed in the case of corporate loans. The deterioration in the corporate portfolio quality of cooperative credit

Table 4: Key indicators of corporate portfolio quality at cooperative credit institutions

Percent	2008	2009	2010 H1	2010 H2	2011 H1	2011 H2	2012 H1
Share of 90 days past due loans to total loans	12.8	13.8	17.8	17.3	25.0	25.9	26.9
Coverage ratio	40.9	42.9	35.0	35.2	30.4	32.2	35.6
Loan loss provisioning as a percentage of total loans	1.2	1.3	-	1.9	2.2	2.1	2.0

Source: MNB.

Table 5: Key indicators of household portfolio quality at cooperative credit institutions

Percent	2008	2009	2010 H1	2010 H2	2011 H1	2011 H2	2012 H1
Share of 90 days past due loans to total loans	9.1	11	13	13.8	16.9	16.97	15.5
Coverage ratio	47.9	50.6	46.7	46.6	45.3	46.22	47.0
Loan loss provisioning as a percentage of total loans	0.9	1.3	-	1.2	1.1	1.685	1.3

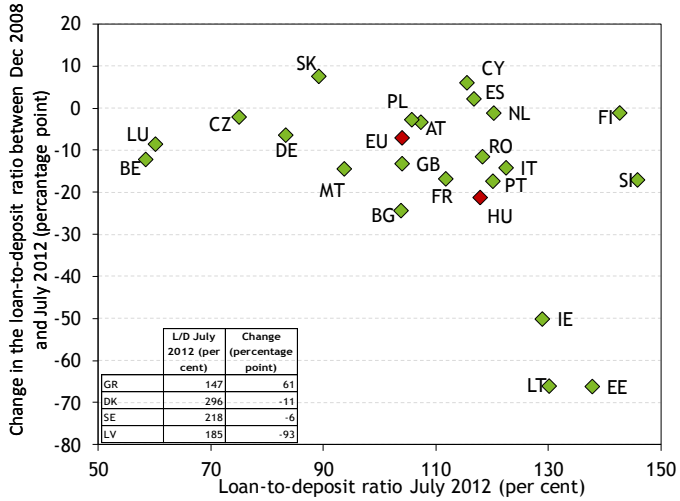
Source: MNB.

institutions continued in H1, although only to a minor extent. However, the half-year value of around 27 per cent is considered very high (Table 4). Moreover, a stronger increase would have occurred if one institution had not been excluded from the observation due to liquidation proceedings. Notwithstanding this slight deterioration, there was no material change in the cost of provisioning. As a result, an overall improvement took place in the loan loss coverage of non-performing loans. As regards the household portfolio, an improvement was observed (Table 5), which was also attributable to a change in the aforementioned decrease in the number of institutions. In addition, the decline in the NPL ratio was facilitated by an increase in the household portfolio of the sector, which is basically attributable to the new loans extended for early repayments during the scheme. Overall, the ratio of non-performing loans within the sector amounted to 15.5 per cent at the end of the period. The improvement reduced the need for loan loss provisioning as well, i.e. the loss on this portfolio was lower.

4. BANK LIQUIDITY – The outflow of foreign funds remains accelerated, while swap market exposure is still high, despite some moderation

In 2012, deleveraging of the domestic banking sector continued, and the loan-to-deposit ratio declined close to the European average. In order to avoid excessive outflow of external funds and the subsequent strong deleveraging a new commitment, similar to the 'Vienna Initiative', by parent banks would be of particular importance. The FX swap exposure of the banking sector declined steadily in 2012, but its level is still high. The MNB initiated that banks should reduce and keep their off-balance-sheet open positions to total assets under 15 per cent.

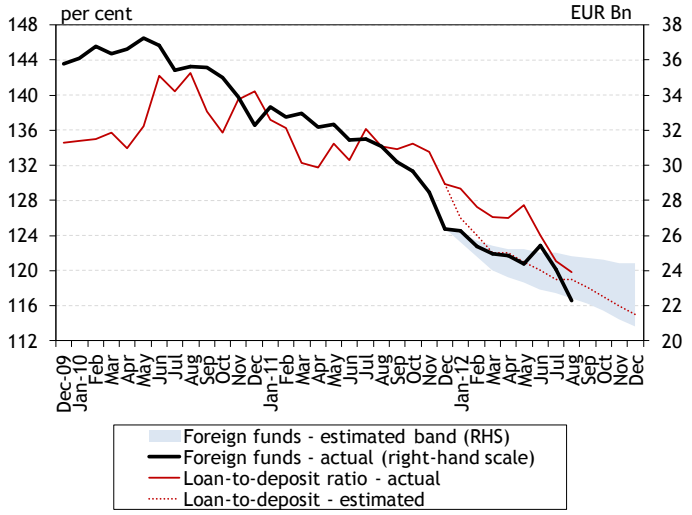
Chart 50: The loan-to-deposit ratio in international comparison



Source: ECB.

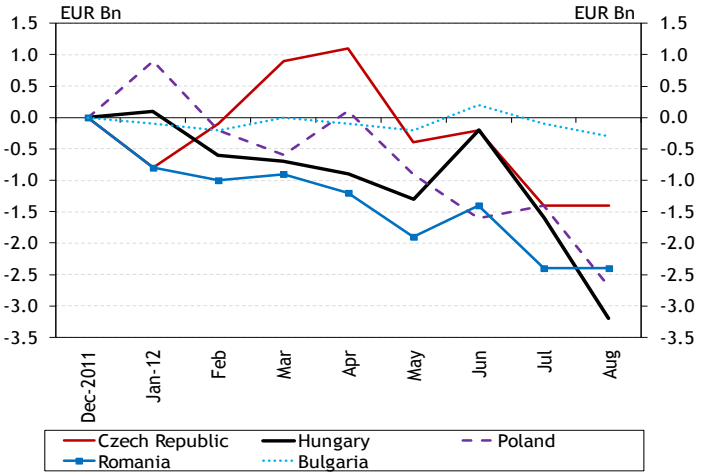
Despite considerable improvement, the loan-to-deposit ratio may decrease further. As a result of the strong deleveraging of the banking sector, by July 2012 the loan-to-deposit ratio reached the approximately 120 per cent level observed in most of the countries of the European Union. There are significant differences in the adjustment processes across countries. While in Hungary it was mainly the amount of loans outstanding that declined since end-2008 (largely due early repayments), in the other countries of the region it is mostly the total amount of deposits that increased. In spite of the intensive adjustment (Chart 50), the loan-to-deposit ratio of the Hungarian banking sector cannot be considered low in regional comparison, while there is substantial asymmetry among banks. Therefore, the loan-to-deposit ratio may decrease further.

Chart 51: Foreign funds and the loan-to-deposit ratio, as well as their forecast



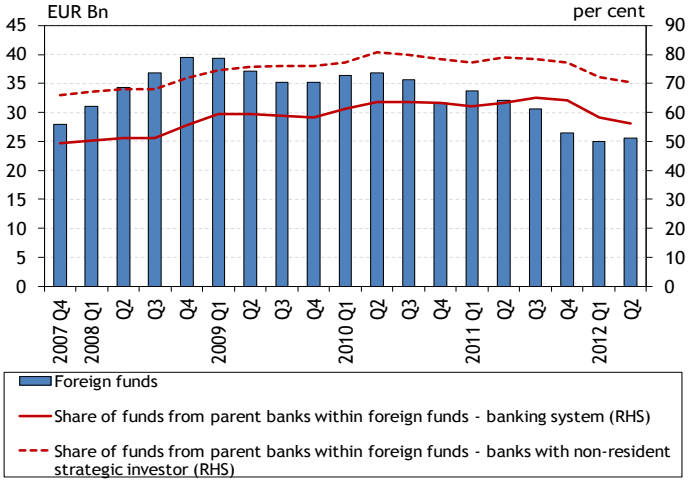
Note: The forecasts are based on the spring 2012 *Report on Financial Stability*.
Source: MNB.

Chart 52: Cumulated change of foreign funds in selected CEE countries' banking sector (Dec 2011 = 0)



Source: ECB.

Chart 53: Foreign funds of the banking sector and the share of parent bank funds within foreign funds total



Source: MNB.

In order to reduce the steady withdrawal of external funds, stronger parent bank commitment would be necessary. Apart from temporary impacts, the decline in external funds of the banking sector continued this year as well, by a total EUR 4 billion until August 2012 (Chart 51). Due to their restrained activity, banks used only a part of the liquidity stemming from the early repayment scheme for the disbursement of new loans, while using most of it to repay foreign liabilities. Starting from Q3, the outflow of funds began to accelerate again, and thus the pessimistic forecast may materialise by the end of the year, i.e. external funds of the banking sector may fall by as much as EUR 6 billion in 2012. The increasing tax burden of the banking sector poses risks as the outflow of external funds may be more accelerated than our previous anticipation.

The outflow of external funds until August cannot be considered a country-specific development in a regional comparison. From 2011 Q4 to 2012 Q1, departing from regional developments, the outflow of external funds from the Hungarian banking sector accelerated considerably, attributable to a great extent to the early repayment scheme. However, as of 2012 Q2 the outflow of external funds has also accelerated in other regional countries: external funds of the banking system decreased to similar extent in Romania and Poland (Chart 52).

The share of parent bank funding declined markedly this year compared to previous periods. The proportion of parent bank funds has been declining steadily since the end of last year: at present, the ratio of parent bank funding is 56 per cent in the banking sector, following an 8 percentage point decline since the beginning of the year, whereas in the case of banks that have foreign owners this ratio fell from 77 per cent at the end of last year to 70 per cent by June 2012 (Chart 53).

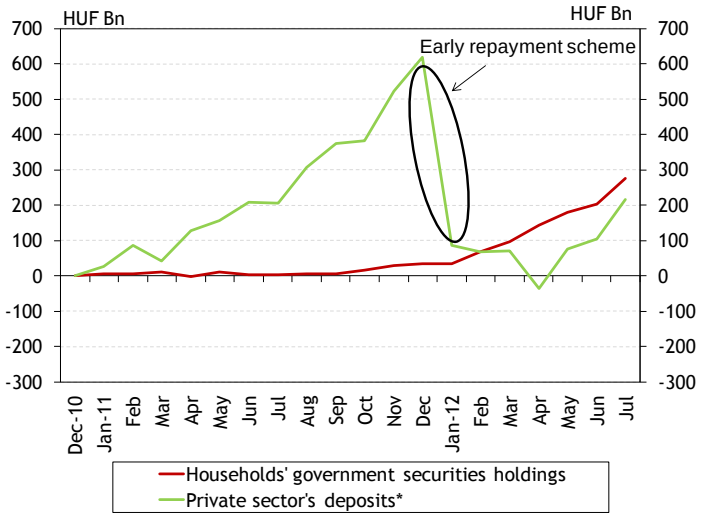
The outflow of external funds does not translate into liquidity tensions, but may contribute to persistently weak lending activity. One favourable development is that the dynamic outflow of external funds is not leading to liquidity tensions, as the appreciation of the forint and the decrease in CDS spreads and in FX swap exposure offset the negative effects. At the same time, the causality between the outflow of external funds and the contraction in lending can easily intensify again. In order to avoid strong deleveraging, it is thus still important to achieve a Vienna Initiative-type agreement on

parent banks' commitment that can be related to the EU/IMF agreement.

The increase in domestic deposits is slow; therefore, the reliance of the Hungarian banking sector on external funds may remain strong over the long term. Due to the fragile external environment, it is extremely important for the economy that banks obtain adequate amounts of stable domestic funds. Compared to end-2010, until the early repayment scheme, total deposits of the private sector had increased by some HUF 600 billion, which flowed out of the banking sector mainly as a result of the early repayment. In the period since then, however, the increase in private deposits has remained moderate. All this implies continued reliance of the banking sector on external funds.

The stronger role of the state in the competition for savings may also slow down the adjustment of funding models in the banking sector. In recent months, the state has also raised competition for domestic funds, which is reflected in increased marketing as well as in attractive interest rate conditions. As a result, since early 2012 households' government securities holdings have increased by some HUF 250-300 billion (Chart 54). According to the latest information, the government plans to issue retail FX-denominated securities in the near future that may also weaken funding position of the banking sector. At the same time, a partial rechanneling of households' cash holdings, which are high in international comparison, into the banking sector may contribute to an increase in domestic banks' funds (Box 9).

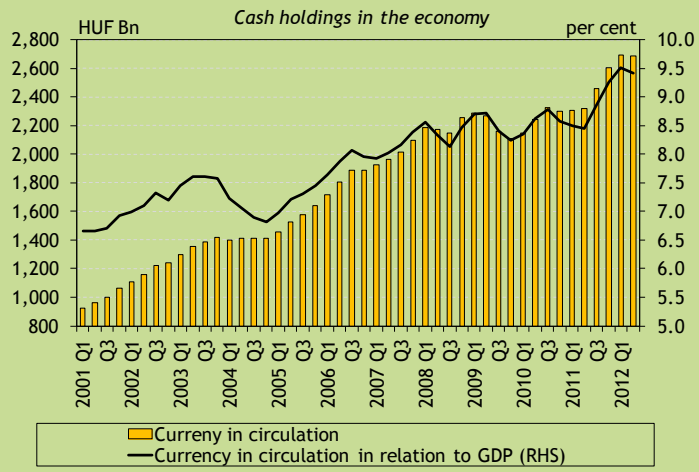
Chart 54: Government securities holdings of households and deposits of the private sector (cumulative net changes compared to end-2010)



Note: * contains the bank deposits of money market funds as well.
Source: Government Debt Management Agency (ÁKK) and MNB.

BOX 9: EXPECTED IMPACT OF CHANNELLING CASH HOLDINGS INTO THE BANKING SYSTEM

The changing state and bank funding model following the crisis intends to increasingly rely on households' savings. At the same time, household deposits of banks have only increased slightly to date, and thus over the short run the banking sector could rather obtain additional funds via a realignment of household savings. One of the most obvious ways could be the channelling of the cash held by economic agents into the banking system and into direct state financing.

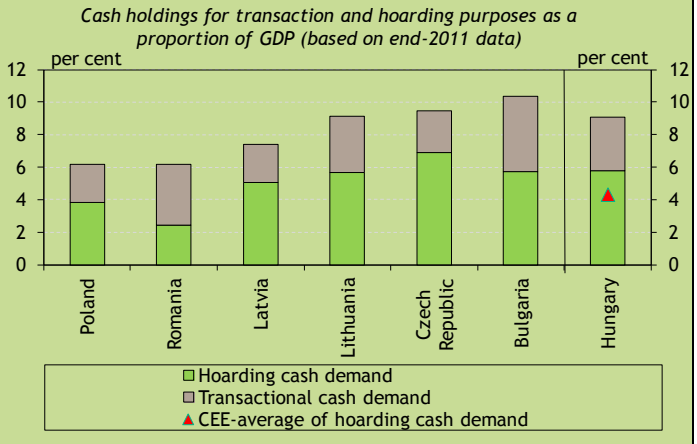


Source: MNB.
Note: Quarterly average value of cash holdings, seasonally adjusted.

Cash holdings in the Hungarian economy have increased considerably in the recent period. Even though nominal cash holdings increase in parallel with economic growth and inflation, in the past years the cash demand of the Hungarian economy grew to a greater extent than justified.

The cash holdings of economic agents can be split up into two parts according to function:[30] cash holdings for transactions and for hoarding purposes. Transactional cash demand indicates the amount of cash necessary for performing the daily goods and services turnover. Its size is determined by the payment and banking infrastructure available in the given economy and the payment habits of economic agents (number of ATMs, POS terminals and bank branches, number of bank cards and bank accounts, number of payments by bank card, etc.). In addition to the transaction cash holding, economic agents may set aside a part of their savings as well in cash; in this case the hoarding motive prevails, typically influenced by the opportunity cost of cash holdings (deposit rates), financial literacy and the size of the black/grey economy. Based on the financial account statistics of the MNB, most domestic cash holdings (approximately 80–85 per cent) are held by households.[31]

The cash demand of the Hungarian economy is rather high in international comparison, not only compared to West European countries where financial culture is more developed, but also to the average of Central Eastern European countries.[32] By separating transaction purpose cash demand from the total cash holdings in the Central Eastern European countries, the cash holding for hoarding of the Hungarian economy becomes comparable to that of the peer group. Assuming that cash holdings for a hoarding purpose in Hungary may sink to the level of the Central Eastern European average, around HUF 400 billion could be channelled into the domestic banking system. As a result, household deposits in the banking sector could increase by approximately 6.3 per cent.



Source: Own calculation based on ECB data, MNB.
Note: Transaction cash holdings estimated on the basis of Sisak (2011). Cash holdings for a hoarding purpose also contain the cash demand related to the hidden economy. CEE average calculated on the basis of Polish, Bulgarian, Romanian and Czech data.

Channelling a part of domestic cash holdings into the banking system would have different impacts on the various economic sectors. It would have a clearly positive impact from the banking sector's point of view, as bank funding (increasing deposits) and profitability (deposit margin, other revenues from fees) would improve.

[30] For details see: Balázs Sisak (2011): What drives cash demand?, MNB WP; Humphrey, D., A. Kaloudis and G. Øwre (2000): Forecasting cash use in legal and illegal activities, Working paper, Central Bank of Norway; Snellman, J. S., J. M. Vesala and D. Humphrey (2001): Substitution of non-cash payment instruments for cash in Europe, Journal of Financial Services Research, Vol. 19 No. 2–3, pp. 131–145.
[31] In connection with these data it is important to emphasise that the cash holdings of households is determined in the national statistics using the residual principle; accordingly, the cash holdings of the black/grey economy may also appear here.
[32] Balázs Sisak (2011): What drives cash demand?, MNB WP.

Channelling the cash into the banking system would be advantageous for households as well, as they would realise interest income on their savings instead of holding cash interest free. If banks would increase their credit supply owing to the additional funds, access of companies to credit could also improve, contributing to economic growth as well. From the state's point of view there would be two contrasting effects: banks could also use their additional funds to buy government securities, which would have a positive effect on yields; at the same time, the seigniorage revenue of the state through the central bank would decline.

In order to reduce cash holdings, several European countries have introduced regulations to reduce cash payments, while encouraging electronic payment. One of the most widespread solutions is that cash payments are restricted to some limit, although its size and scope (corporate and/or retail transactions) vary significantly across countries. Other typical regulations include the rule of meeting tax payment obligations through transfers, the mandatory transfer of salaries and government transfers to bank accounts and also the introduction of the related basic account.

Regulations encouraging the reduction of the use of cash in selected European countries

Limitations on payments in cash	BE, FR, DK, LT, FI, BG, ES, (IT: suspended at present), (HU: proposal waiting for adoption)
Meeting tax payment obligations by cashless payment	DE, GR, NL, UK, HU (applies to companies only)
Introduction of basic account	BE, FR, DE, UK, NO
Mandatory transfer of state transfers to bank account	FR, DE, UK
Mandatory transfer of salaries to bank account	NO, HU (applies to civil servants only)

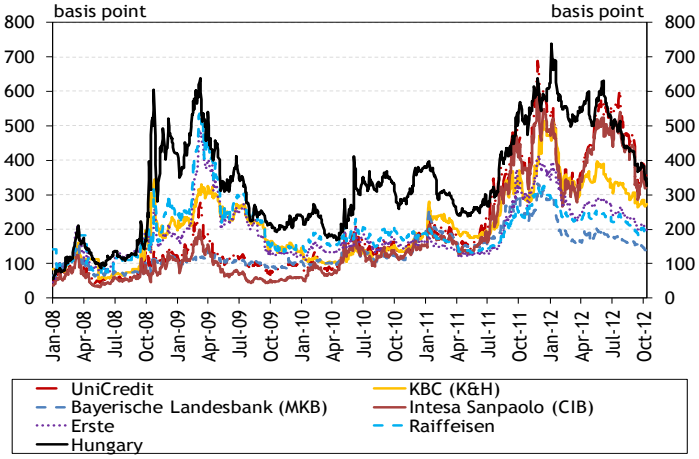
Source: MNB collection.

In order to channel a part of cash holdings into the banking system, the introduction of a comprehensive regulatory package aimed at containing cash payment would be worth considering in Hungary. In the case of companies, several regulations already exist[33] or are expected to enter into force in the near future,[34] but for households, the legislation is still rather incomplete. Incentives affecting transactions money demand may, over the long term, also result in an improvement in households' financing capacity within the banking system.[35]

As a basic element of the regulatory package for households it would be worth introducing a compulsory basic account scheme. Citizens – typically without bank account previously – who meet predetermined conditions could open a bank account for a minimum fee (or even free of charge) and with basic payment services at any bank and could use this account to perform their payment transactions. If the payment and bank infrastructure (number of POS terminals, availability of bank branches, development of Internet penetration and the system that accepts electronic payments,[36] etc.) allows it in the future, the compulsory transfer of salaries and state transfers to bank accounts and the limiting of cash payments may be the next steps in shaping an economy which relies on cash to a lesser extent. The current draft of the transactional tax legislation represents a significant move towards a reduction of cash payment transactions, as a significant higher tax rate would/will be imposed on cash payments than on non-cash transfers. Since the financial institutions are liable to pay the tax, the desired impact can be only obtained, if the banks will pass on the tax on cash payments and not on other services.

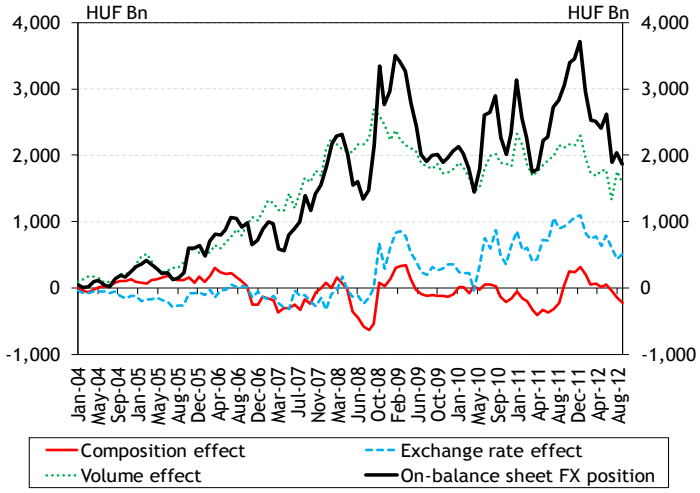
[33] As of 1 November 2009, economic organisations must have a current account, and they also have to meet their tax payment obligations from this account (for details, see Act XCII of 2003 on the Rules of Taxation).
[34] According to a bill not yet adopted by the National Assembly, as of 1 January 2013, enterprises will not be allowed to pay more than HUF 1.5 million in cash in a calendar month on the basis of the same one contract.
[35] In recent years, the MNB has drafted several proposals to reduce the use of cash and encourage the use of electronic modes of payment, and is currently discussing a number of issues with government agencies and market participants concerned as well. The proposals are presented in detail in the MNB publication 'Jelentés a fizetési rendszerről' (*Report on the Payment System)* (2012).
[36] This may include a reduction of retailers' costs related to purchases by card, the implementation of a tender that supports the installation of POS terminals or the gradual introduction of the mandatory acceptance of payment cards in retail trade.

Chart 55: Five-year CDS spreads of parent banks and Hungary



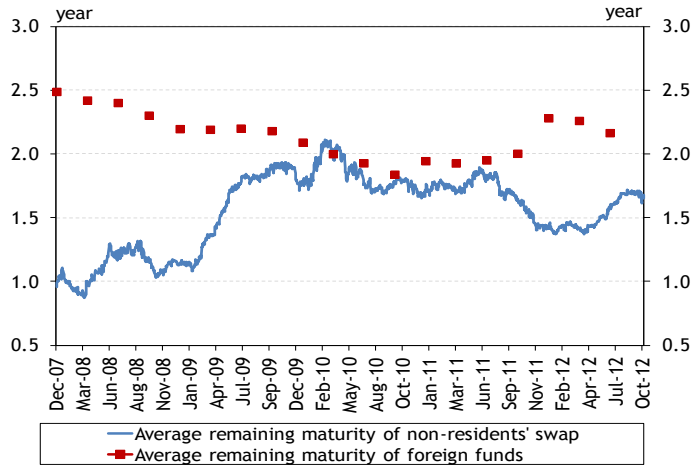
Source: Bloomberg.

Chart 56: Decomposition of the change in the on-balance-sheet FX position of the banking sector



Note: Composition effect: clients change the denomination composition of their loans or deposits. Volume effect: the on-balance-sheet FX position changes as a result of items that are coupled with increases or decreases in the balance sheet total. Exchange rate effect: the value of on-balance-sheet foreign exchange assets and liabilities expressed in forints changes as a result of changes in foreign-exchange rates.
Source: MNB.

Chart 57: Average remaining maturity of foreign funds and gross foreign FX swaps



Source: MNB.

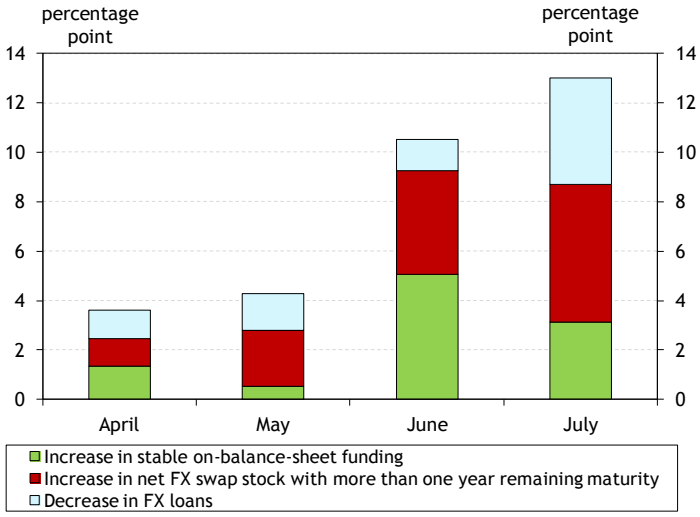
Despite a sharp decline, funding costs remain high, putting pressure on profitability. Although the sovereign Hungarian and parent bank CDS spreads, which determine funding costs, have fallen significantly since 2012 Q2, their levels remains elevated (Chart 55). In spite of a decline in spreads, on-balance-sheet foreign currency denominated funds remain expensive for domestic banks. Therefore, in terms of profitability, obtaining foreign exchange liquidity through FX swap transactions may remain a more lucrative alternative for them.

Notwithstanding the steady outflow of external funds, the net FX swap exposure of the banking sector continued to decline. The exchange rate effect and the composition effect played a key role in the approximately HUF 500 billion fall in holdings observed since end-March. The volume effect did not affect the on-balance-sheet open foreign exchange position considerably, in spite of the fact that banks had repaid their foreign currency denominated liabilities before an adequate quantity of foreign currency loans matured on the asset side. This is attributable to the fact that the exposure increasing effect of the outflow of external funds was completely offset by clients' increasing foreign currency deposits and the decline in margin requirements due to exchange rate appreciation (Chart 56).

One favourable development is that the average remaining maturity of FX swaps outstanding increased considerably, thus mitigating the roll-over risk of swap transactions. This phenomenon may be primarily attributable to the introduction of the foreign exchange funding adequacy ratio (FFAR) in July. During the preparation, many banks concluded transactions with maturities of over one year in several steps, thus adding to the stable foreign currency funds and reducing roll-over risks (Chart 57).

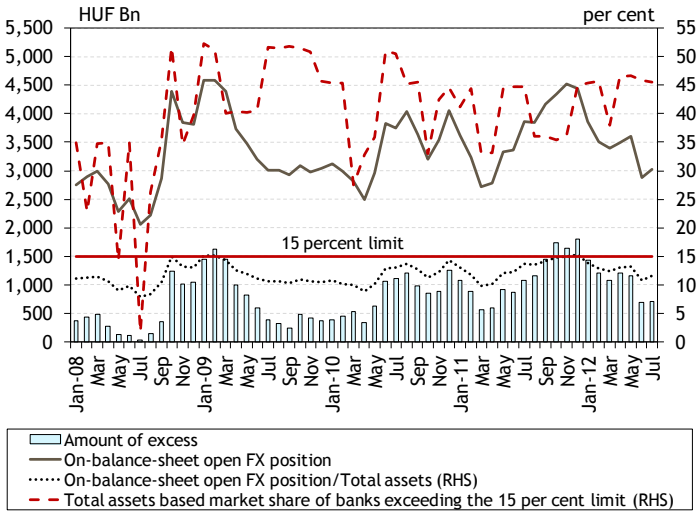
Banks succeeded in catching up with the FFAR regulation mainly by extending the maturities of swap transactions. The majority of banks affected by the regulation started the adjustment to reach the 65 per cent minimum level in 2012 Q2. The process of catching up was the most intensive in June, while in July only a minor improvement was observed in the maturity mismatch. Accordingly, the average FFAR of the banking sector has improved by 13 percentage points since March. Decomposition of the adjustment process reveals that banks mostly

Chart 58: Decomposition of the change in the FFAR of the banking sector (exchange rate adjusted, change calculated since end-March)



Source: MNB.

Chart 59: On-balance-sheet position of the banking sector and the proportion of banks which exceed the 15 per cent limit as a percentage of the balance sheet total



Source: MNB

increased their FX swap exposure with a maturity of over one year. In addition, the decline in foreign currency denominated assets also played an important role. The expansion of on-balance-sheet stable foreign currency liabilities contributed to the improvement in the indicator only to a lesser extent (Chart 58). Upon entry into force of the regulation, 99 per cent of the banking sector on the basis of balance sheet total complied with the expected level; only three small banks did not reach the minimum level.

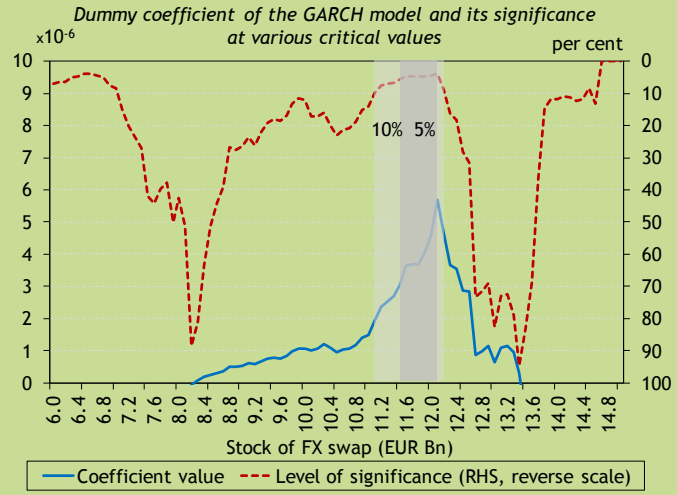
At the same time, the still high swap exposure of domestic banks poses a considerable systemic risk. Our econometric calculations show that the critical level of domestic banks' swap exposure is around HUF 3,000–3,200 billion (EUR 10–12.5 billion), above which systemic risk may intensify. Based on model results, in the past the FX swap exposure amplified the negative effect of external shocks on the exchange rate and the volatility of the forint above these levels (Box 10). The central bank started negotiations with commercial banks so that the banking sector's FX swap exposure does not exceed the above-mentioned critical level. The central bank's goal is that commercial banks keep their FX swap exposure (or more precisely their off-balance sheet open FX position) under 15 per cent to total assets[37] (Chart 59).

[37] The positive/negative values refer to off-balance sheet net long/short HUF position.

BOX 10: WHAT DEGREE OF FOREIGN EXCHANGE SWAP EXPOSURE MAY POSE A FINANCIAL STABILITY RISK?

The high swap exposure of domestic banks jeopardises the stability of the financial system for several reasons. Firstly, the maturity of banks' foreign exchange funding through swaps is typically shorter than that of external funds, increasing the maturity mismatch of credit institutions. Secondly, in the case of significant forint depreciation the margin call requirement of swaps causes a strong foreign exchange liquidity shock to the banking sector. In such cases, the transmission of monetary policy may become impaired, as implied forint yields may decline and may deviate from MNB interest rates. As a result, taking up short forint positions may become cheaper, exacerbating front depreciation. The greater the swap exposure, the stronger negative spiral that may start up, adding to the size of the shock to the economy as a whole. Using econometric estimates, we attempted to model this mechanism.

With the help of OLS and GARCH models, applying so-called dummy variables, we tried to determine the critical level of the swap exposure above which – in the case of an external, unfavourable risk premium shock – negative feedback cycles leading to further depreciation may begin. The mechanism of the negative spiral is as follows: following the exchange rate depreciation effect of the shock, the margin call requirement for banks with swap exposures surges, resulting in higher foreign exchange demand of credit institutions. The mounting demand for foreign exchange may put downward pressure on the forint exchange rate, and the depreciation increases bank' margin call requirements further. The second-round effect on the exchange rate may be significant when the swap exposure is high, because then the rise in foreign exchange demand of banks is considerable compared to the turnover in the foreign exchange market.



Source: MNB.

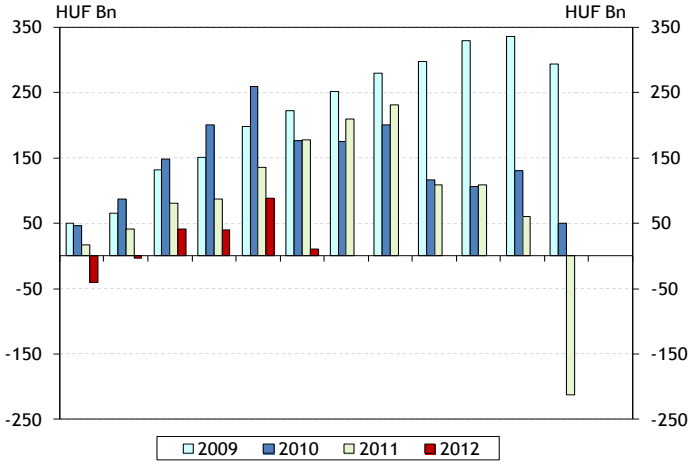
We assume that the swap exposure has a threshold above which the demand for foreign exchange that surges due to the increase in the margin call requirement results in a major depreciation of the exchange rate. For the estimation of this threshold, we tried to explain the change in/volatility of the EUR/HUF exchange rate with, inter alia, the level of the swap exposure, the change in the VIX index (a proxy widely used for global risk appetite), the change in the EUR/USD exchange rate and the changes in the EUR/HUF exchange rate observed in previous periods. The threshold was determined based on the levels where the swap exposure as explanatory variable was the most significant, taking into account at which levels the value of the coefficient and the explanatory power of the model were higher. Based on the results of the OLS models, these factors jointly indicate that the critical level is at a swap exposure of EUR 10–12.6 billion, whereas according to the GARCH models it is between EUR 11.6–12.2 billion. This amount represents approximately 15 per cent of the balance sheet total of the banks operating in Hungary.

5. PROFITABILITY AND CAPITAL ADEQUACY – The high interest margin is able to offset negative shocks to a great extent, however over the longer term it may amplify the procyclical behaviour of the banking sector

The pre-tax income of the banking sector has reached a 15-year low, while there is considerable asymmetry in profitability: the aggregate pre-tax profit of HUF 11 billion is the result of profits amounting to HUF 96 billion and losses amounting to HUF 85 billion. At the same time, the interest margin of the banking sector is extremely high in international comparison, and if costs decline this may ensure restoration of the favourable profitability of the Hungarian banking sector in regional comparison. Despite our previous expectations that restoration would take place till 2013, it will be delayed. First the full amount of bank levy has been upheld and the rate of financial transaction tax has been doubled. Second, the risk of additional loan loss provisioning needs on outstanding loans is elevated. All these may translate into higher interest rate margin aimed at offsetting the losses. Over the longer term, however, the high interest margin is undesirable in terms of financial stability, as it means a greater debt servicing burden for clients, which may lead to a negative spiral through additional portfolio quality deterioration.

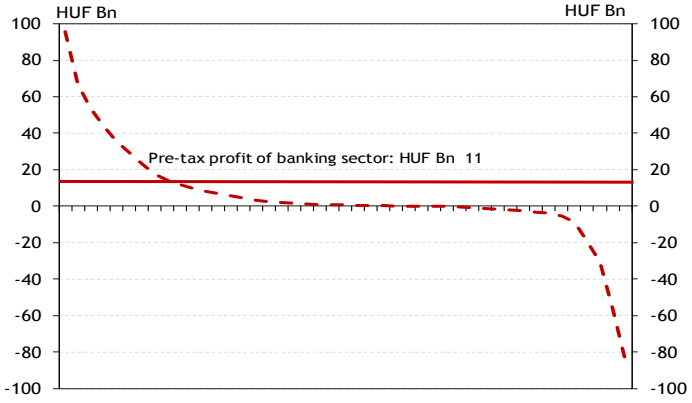
The capital adequacy ratio shows strong shock-absorbing capacity at banking sector level. Although the sector-level CAR is nearly double the regulatory minimum, capital buffers remain highly concentrated, while retained earnings capacity is weak.

Chart 60: Aggregate pre-tax profit of the banking sector and branches



Source: MNB.

Chart 61: Pre-tax loss and profit of banks and branches cumulated on individual level (June 2012)



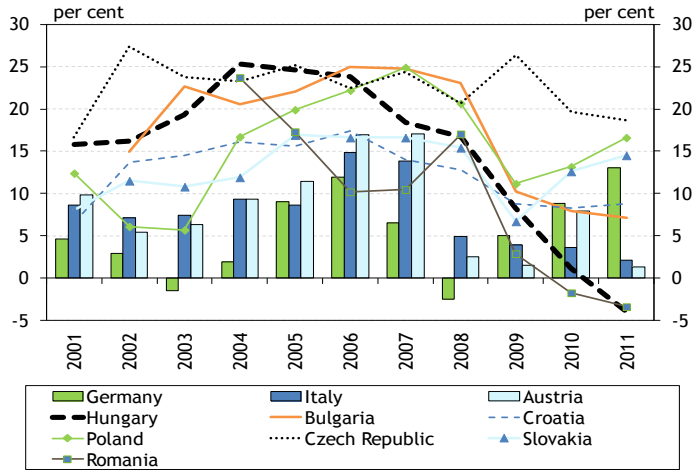
Source: MNB.

The pre-tax profit of the banking sector in the first half of the year was the lowest in the last 15 years. At end-June 2012, the total pre-tax profit of the banking sector and branches amounted to HUF 11 billion (Chart 60). This was the weakest performance in the last 15 years, and is well below the profit of HUF 178 billion recorded in the previous year. Looking at developments in the pre-tax profit, a considerable fall occurred in June 2012 owing to the one-off settlements of two banks. The pre-tax 12-month rolling profitability indicators are in the negative territory; at end-June ROE was -14.3, while ROA was -1.2 per cent.

Asymmetry in profitability remains high. Although the asymmetry in profitability narrowed somewhat, it is the result of declining profit of profitable banks. 54 per cent of the gross profit of the banking sector continues to be related to the three most profitable banks. The loss is also extremely concentrated; three banks are responsible for three quarters of it, while the majority of banks are characterised by a profit of around zero. The pre-tax profit of HUF 11 billion of the banking sector is the result of profits amounting to HUF 96 billion and losses amounting to HUF 85 billion (Chart 61).

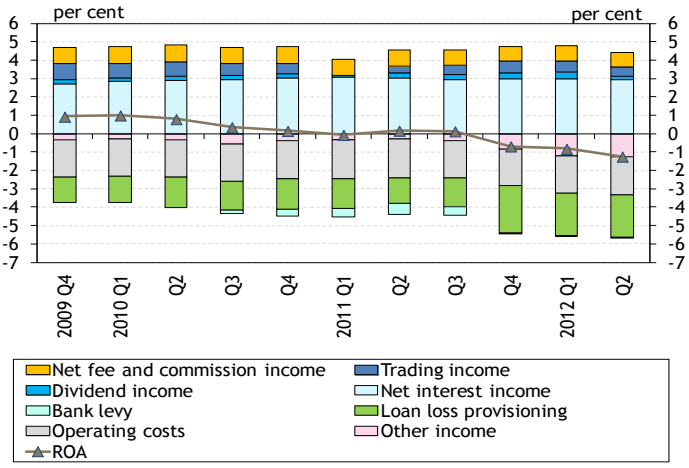
Profitability indicators are low in international comparison as well. A review of a longer period reveals that the current level of the after-tax ROE is well below that of the countries of parent banks and of the peer countries in the region that compete with

Chart 62: Banking sector ROE in international comparison



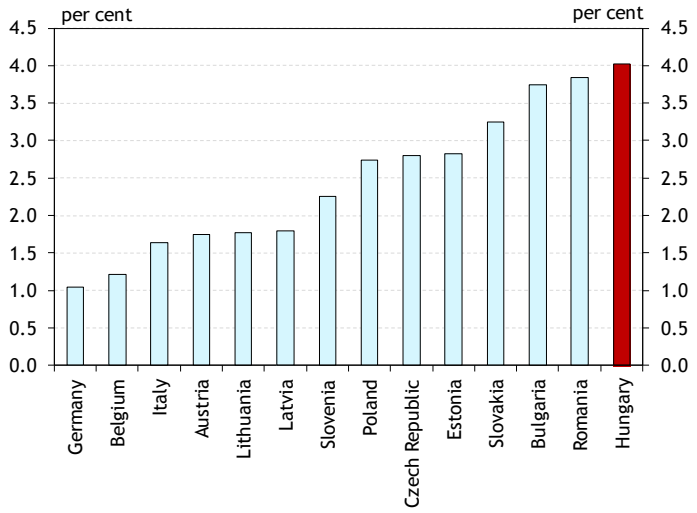
Note: Based on IMF GFSR data, calculated from consolidated after-tax profits.
Source: IMF and MNB.

Chart 63: Aggregate 12-month main rolling profit items of the banking sector and branches as a proportion of the 12-month average balance sheet total



Source: MNB.

Chart 64: Net interest income as a proportion of the balance sheet total of selected banking sectors at end-2011



Source: ECB CBD database.

Hungary for foreign funds (Chart 62).

A significant portion of the income stems from net interest income. Comparing the data of the banking sector on a 12-month rolling time series to the 12-month average total assets shows that net interest income – although its volume and ratio have declined – remains the largest and at the same time most stable source of income of the banking sector. The ratio of profit from net fees and commissions as well as the profit from trading income has not changed considerably compared to last year. Losses suffered on other income continued to grow in 2012 Q2 as well, which is attributable to the provisioning of two banks for derivative transactions amounting to HUF 80 billion and goodwill write-offs. There was a slight decline in operating costs, but their weight did not change significantly. The ratio of loan loss provisioning remained unchanged compared to the previous quarter (Chart 63).

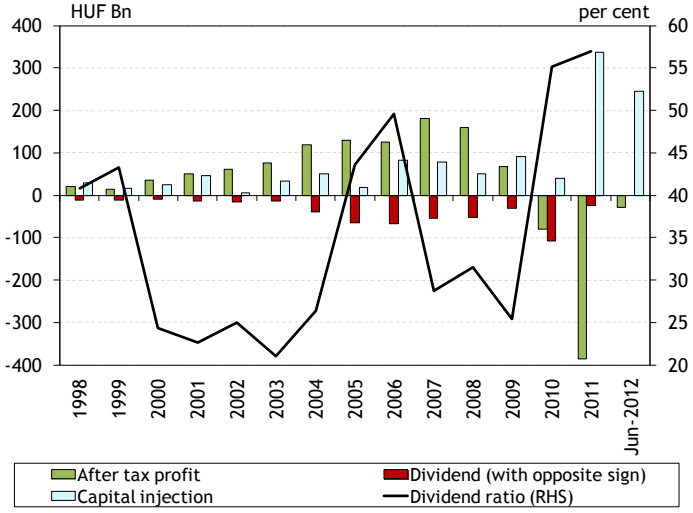
The ratio of the net interest income of the domestic banking sector to total assets is the highest in regional comparison. In evaluating the high net interest income (Chart 64), it deserves special attention that due to default nearly one fifth of the portfolio does not produce any interest at all. Reaching this high level in international comparison is basically attributable to the higher interest margin and the significantly lower interbank activity. In addition, in the case of domestic banks a much greater portion of revenues is related to interest income than in more developed states, where the net fee and commission plays a much more important role. However, for lack of alternative sources of income, banks aim to maintain the high interest margins over the long term in the household segment both in the case of foreign currency denominated mortgage loans and the newly granted mainly subsidised HUF-denominated mortgage loans. By contrast, corporate lending is characterised by high price competition, and accordingly the interest margin is not the most important motivation for banks.

Transparent pricing failed to materialise for outstanding loans. Pursuant to the decree regulating transparent pricing, as of April 2012, banks can only extend loans with a reference base and fixed premium or fixed loans in terms of the total interest to households. As a result, banks are allowed to amend their lending rates on outstanding loans only in very limited cases. Banks have applied this

regulation to new loans. However, the interest rate conditions of loans outstanding have not become transparent. Banks were required to offer a new loan product with transparent pricing before end-August 2012 to enable clients to replace their old products whose pricing was non-transparent. However, banks extended new loans at higher prices than the old ones. Therefore, clients did not refinance loans, and thus the pricing of foreign currency denominated mortgage loans outstanding remains non-transparent. The solution could be if the regulation on transparent pricing on outstanding mortgage loans would be extended up to the maturity of loans.

The high margin may stabilise profitability over the short run, but might be unsustainable over the long term. The high interest margin attributable to pricing dominance in the case of foreign currency denominated mortgage loans outstanding is able to shield banks from substantial capital losses over the short run by offsetting the bank levy, burdens and loan losses. At the same time, the high interest margin translates into a higher debt servicing burden for clients, which affects deteriorating portfolio quality and results in lower consumption and economic growth. This may trigger a negative spiral and amplify procyclicality: via deteriorating portfolio quality and a rising interest margin to offset this. All this may undermine the capital position of the banking sector over the medium and longer term. This risk could be managed by reducing the tax burdens on the domestic banking sector, thereby restoring the profitability of the financial system over the medium term, and helping to break the negative spiral between the interest margin and portfolio deterioration.

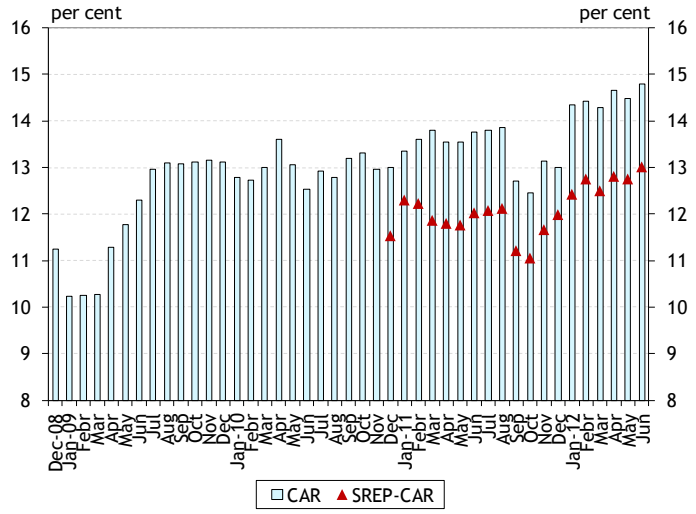
Chart 65: Profit after tax, dividend and capital increases of existing foreign-owned banks



Note: In the dividend disbursement ratio, the dividends were taken into account only to the extent of the profit of the given year.
Source: MNB.

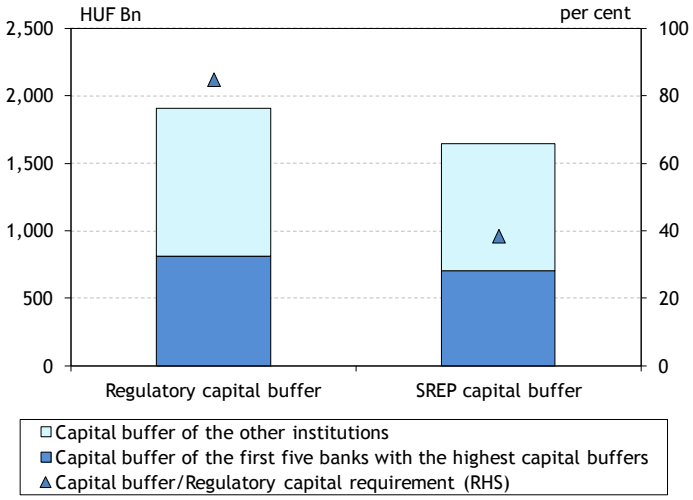
In the pre-crisis years, foreign-owned credit institutions reinvested the greater portion of their after-tax profits and raised capital in the case of losses. In the pre-crisis period, foreign-owned banks withdrew an average 30 per cent of the profit as dividends (Chart 65). However, for several large banks the substantial capital injections (parent banks' EUR 2.4 billion capital injection from early 2009) essential following the crisis considerably exceeded the dividends disbursed during previous years. A typical strategy of certain banks was that they raised capital from the dividend disbursed, i.e. they reinvested it into the affiliate bank. Thus, the commitment of the foreign parent banks to provide the necessary capital largely contributed to the stability of the domestic financial system.

Chart 66: CAR and SREP CAR of the banking sector



Source: MNB.

Chart 67: Capital buffer of the banking sector (end June 2012)



Source: MNB.

Table 6: Pre-tax profit/loss of financial enterprises

HUF Bn	Financial enterprises owned by banks	Financial enterprises without bank ownership	Total sector
2008	18	26	43
2009	-14	5	-10
2010	-40	-3	-43
2011	-39	-15	-54
Jun-2012	-15	4	-11

Source: MNB.

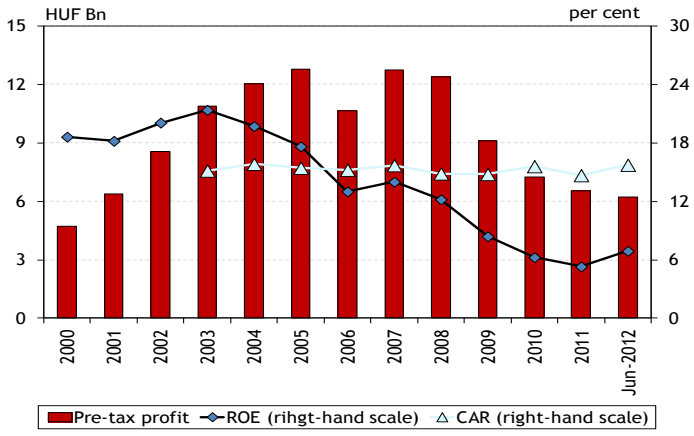
The capital adequacy ratio shows strong shock-absorbing capacity at banking sector level. The CAR increased to 14.8 per cent by end-June 2012. Some of the increase in Q1 is attributable to an increase in capital (capital injection) and some of it to the decline in capital requirement stemming from contraction in loans outstanding (impact of the early repayment scheme). The minimal increase in Q2 at the system level was caused by an increase in the mid-year audited profit and a decline in loans outstanding. The ratio is also influenced by the exchange rate volatility; depreciation reduces the ratio (Chart 66).

Although the sector-level indicator is nearly double the regulatory minimum, capital buffers are concentrated. The banks with the five largest buffers account for more than 40 per cent of the banking sector capital buffer. While the total regulatory capital buffer exceeds the minimum regulatory capital buffer by 85 per cent, in the case of the SREP it is 38 per cent, indicating a more stretched, but still strong capital position (Chart 67). The indicator of one bank was slightly below 9 per cent due to mid-year losses, while all banks complied with the SREP requirements.

Financial enterprises owned by banks remain unprofitable. Based on H1 data, the pre-tax loss of the sector amounted to HUF 11 billion, resulting from the HUF 15 billion loss of bank-owned financial enterprises and the pre-tax profit of HUF 4 billion of non-bank enterprises (Table 6). Enterprises owned by banks restrained their activity considerably; as a result, the deteriorating portfolio is making losses steadily. Some banks decided to merge their affiliated firms, and so this market segment is expected to shrink further.

The half-year pre-tax profit of cooperative credit institutions is close to the level of last year as a whole. The half-year pre-tax profit of cooperative credit institutions amounted to HUF 6.2 billion, which exceeds by 50 per cent the profit of the last year's same period. The source of growth is an increase in interest income and a drop in loan loss provisioning. Provisioning is traditionally lower in this sector due to the smaller proportion of corporate and household lending and of lending in foreign currency. The profitability ratio of the sector is much better than that of the banking sector; the ROE amounted to 6.9 per cent in June (Chart 68).

Chart 68: CAR and ROE indicators and pre-tax profit of cooperative credit institutions



Source: MNB.

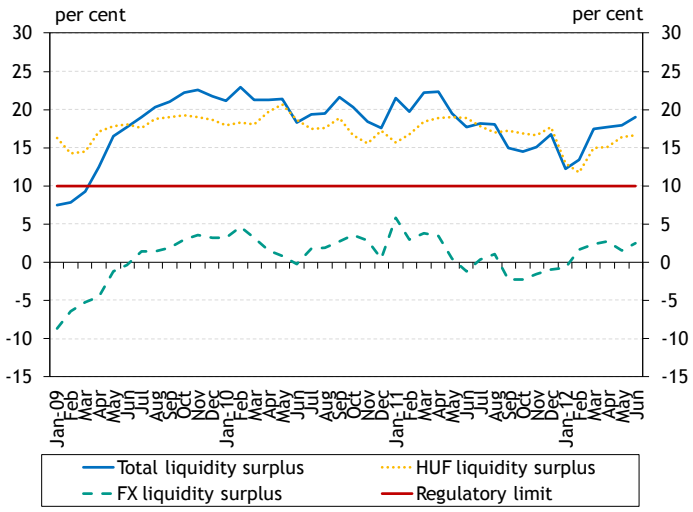
The capital adequacy of cooperative credit institutions is adequate at the sector level, but conceals strong asymmetry. The 15.7 per cent capital adequacy ratio of the cooperative credit institutions sector at end-June 2012 indicates an adequate capital position at the aggregate level for the sector. However, similarly to the banking sector, it masks strong asymmetry. The capital requirement will increase as cooperative credit institutions without an institutional protection fund of a quality required by the HFSA may be required to set aside substantial additional capital of up to 50 per cent due to the SREP. At present, the SREP CAR is 11.6 per cent (Chart 68).

6. LIQUIDITY AND SOLVENCY STRESS TESTS – Both liquidity and solvency stress tests show strong resilience

The results of liquidity and solvency stress tests indicate an improvement in the shock-absorbing capacity of the banking sector. In the event of a low-probability, severely negative scenario involving the simultaneous occurrence of financial market turbulence, deposit withdrawals and an exchange rate shock, banks' liquidity reserves remain adequate; thus the value of the Liquidity Stress Index is low. As liquidity reserves are mostly denominated in forints, in a protracted stress situation one fundamental condition for stable liquidity is the smooth functioning of the FX swap market.

As a result of capital injections by parent banks at end-2011 and this year as well as the steady deleveraging, the capital position of the banking sector has strengthened markedly. This improvement is confirmed by the Solvency Stress Index as well; its current level can be considered adequate. Even in the stress scenario accounting for additional losses on outstanding non-performing loan portfolio as well and the higher tax burden, only one major bank has a capital need over the two-year time horizon, and the magnitude of the total capital need of the banking sector is also manageable, amounting to HUF 28 billion. In addition, a positive change is that the banking sector would be able to weather even a severe shock with a greater capital buffer than half a year earlier.

Chart 69: 30-day liquidity surplus as a proportion of balance sheet total by currencies



Source: MNB.

Based on the stress test, the liquidity shock-absorbing capacity of the banking sector has strengthened

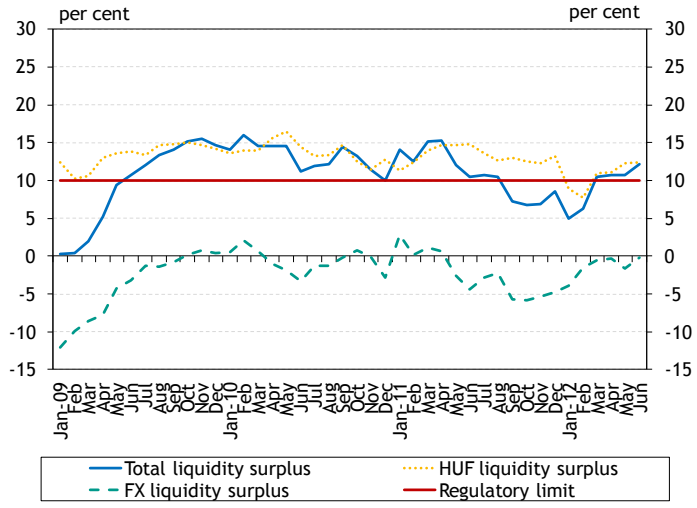
Banks' short-term liquidity is adequate, but mostly denominated in forints. The level of 30-day forward looking liquidity surpluses rose steadily in the past half year, departing from the regulatory limit of 10 per cent to total assets. The banking sector has much higher liquidity buffers than the required level. However, their distribution is asymmetrical and they are mostly denominated in forints (Chart 69).

Table 7: Main parameters of the liquidity stress test

Assets			Liabilities		
Item	Degree (per cent)	Currencies affected	Item	Degree (per cent)	Currencies affected
Default on interbank assets	20	HUF	Withdrawals in household deposits	10	HUF/FX
Exchange rate shock on swaps	15	FX	Withdrawals in corporate deposits	15	HUF/FX
Depreciation of assets eligible at the central bank	10	HUF			

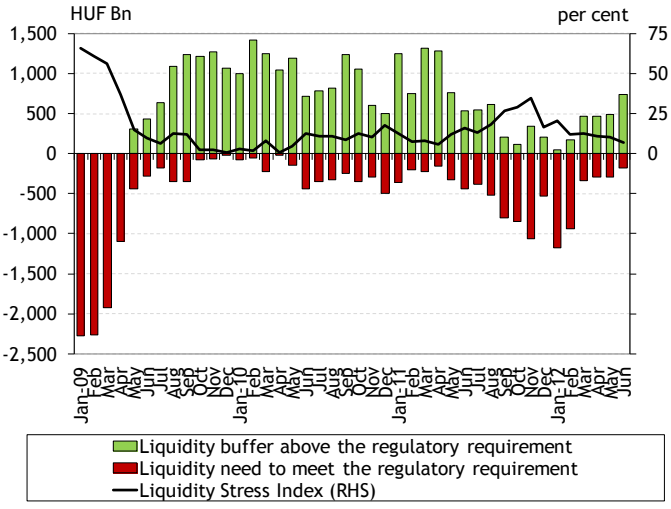
Note: The forward-looking treasury gap assumes no active treasury management on the part of the bank; hence it does not take into account rollovers of maturing interbank and foreign funds.
Source: MNB.

Chart 70: 30-day stress liquidity surplus as a proportion of balance sheet total by currencies



Source: MNB.

Chart 71: Liquidity Stress Index, and banks' liquidity surplus or deficit relative to the regulatory level in the stress scenario



Note: The LSI is the sum of normalised liquidity deficits relative to the 10 per cent level, weighted by the balance sheet total. The higher the value of the index, the higher the liquidity risk in the stress scenario.
Source: MNB.

The short-term liquidity stress test measures the effect of an assumed simultaneous occurrence of financial market turmoil, deposit withdrawal and exchange rate shock. In determining household and corporate deposit withdrawals and the price decline of eligible securities, we applied so-called value-at-risk (VaR) type stresses calculated on the basis of historical data. The magnitude of the exchange rate shock is consistent with the data of our macro stress scenario. Crisis experiences were taken as a basis for determining the other stress measures (Table 7).

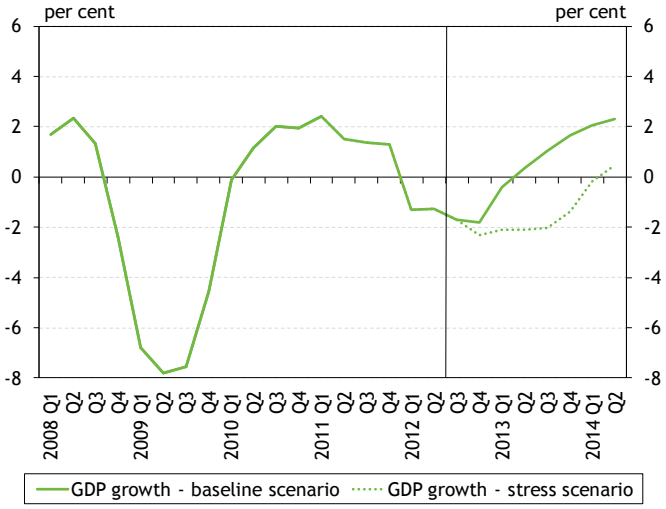
The liquidity surplus of banks after stress is adequate, although forint reserves dominate in this case as well. The 30-day forward-looking stressed liquidity surplus increased in 2012, and its magnitude was above the required level. Forint liquidity continues to dominate, while the shortage of foreign exchange declined to around zero at the banking sector level (Chart 70). At the same time, in a protracted stress situation, the fundamental condition of the stability of liquidity is the smooth functioning of the FX swap market.

The Liquidity Stress Index shows a low value. The Liquidity Stress Index shows to what extent the liquidity buffer of banks falls short of the regulatory limit of 10 per cent to total assets, and the number of banks experiencing a shortfall. Taking account of the extent of the deviation from the regulatory limit as well, and then weighted by the balance sheet total of banks, the value of the index amounts to 6.8 per cent. This means that if the stress scenario took place, the banking sector would be only slightly below the regulatory minimum. It is favourable that no bank would fall below zero; in other words each bank would remain liquid even in a stress situation (Chart 71). It is important to emphasise that there was an increase in stressed liquidity buffers aggregated by banks, while shortfalls declined during the year.

Due to capital injections by parent banks and deleveraging, the solvency stress test of banks shows stronger resilience

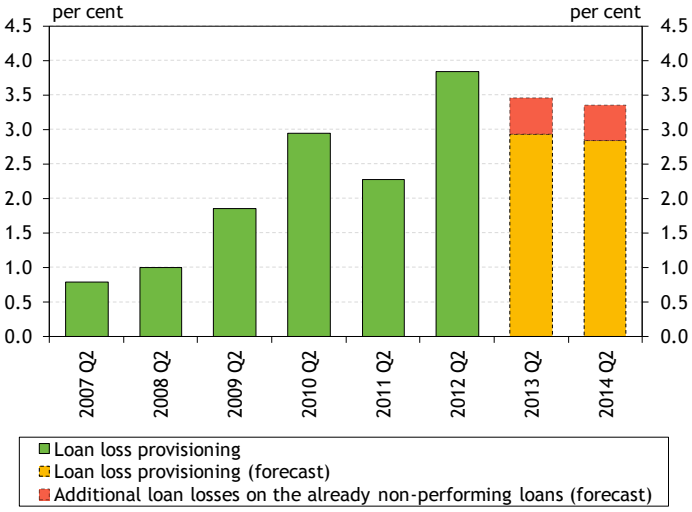
We expect a significant economic downturn, exchange rate and interest rate shocks and additional losses on outstanding non-performing portfolio in the stress scenario of the solvency stress test. The current macroeconomic baseline scenario is identical with the forecast published in the September issue of the *Quarterly Report on Inflation*. This scenario projects a gloomier economic

Chart 72: GDP growth rate in the scenarios (year-on-year)



Source: MNB.

Chart 73: Loan loss rate in the previous four quarters for the corporate portfolio in the stress scenario

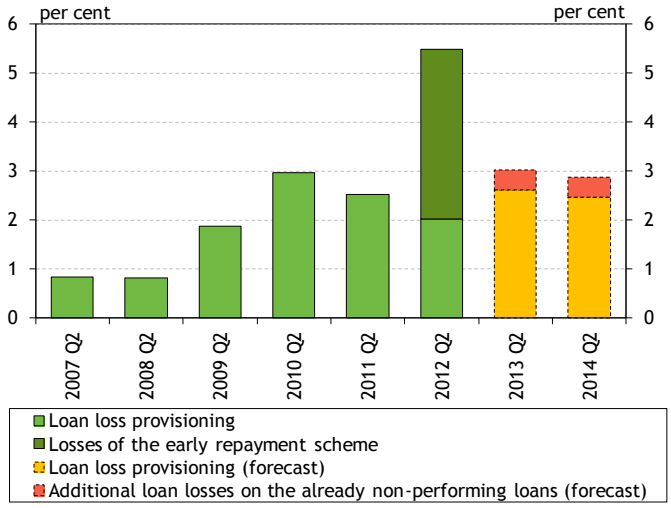


Source: MNB.

outlook for 2012 and 2013 than we used in the spring issue of the *Report on Financial Stability*. While the baseline scenario outlines the most probable scenario, the stress scenario examines the consequences of a low-probability, severe but plausible series of events over the next two years. Earlier, similarly to the baseline scenario, we determined the stress scenario using a model. For the current stress test, we use a stress size based on an expert judgement. In the two years, economic growth will be 4.3 percentage points below the baseline scenario (Chart 72). Meanwhile, the exchange rate of the forint against the euro will depreciate by 15 per cent right at the beginning of the time horizon under review, and this difference will remain unchanged in both years. The interest rate level, i.e. domestic and external financing costs as well, moves 300 basis points upwards and remains there for the whole period. As a result of more severe risks and worsening growth outlook, companies cut pay-rolls, leading to a persistent deterioration in households' income position. Taking into account the pledge of the Swiss National Bank in relation to the exchange rate cap of the franc, we expect an exchange rate of EUR/CHF 1.2 over the entire horizon. Finally, we calculate additional losses on outstanding non-performing portfolio in the adverse scenario.

In the stress scenario, individual institutions' expected income before loan losses reaches 70-100 per cent of the average of the past three years. Profitability is forecasted using an econometric model. The profit/loss to total assets excluding one-off effects is estimated by performing loans to total assets and by the product of several balance sheet items to total assets and their interest rates (thus: EURIBOR + CDS in the case of external funds, housing loans outstanding with the housing loan interest rates, household deposits with the related deposit rate, corporate deposits with the corporate deposit rates and, finally, corporate loans outstanding with the corporate loan interest rates). These forecasts were modified in certain respects on the basis of additional information. In the coming years, profitability before loan losses will be impaired by the substantial contraction in the household portfolio due to the early repayment. Moreover, this missing portfolio was particularly characterized by a good credit quality and high profitability. Therefore, in the stress scenario, incomes before loan losses are lower than the average of the previous three years, by 0–30 per cent, depending on banks. We accounted for the

Chart 74: Loan loss rate in the previous four quarters for the household portfolio in the stress scenario



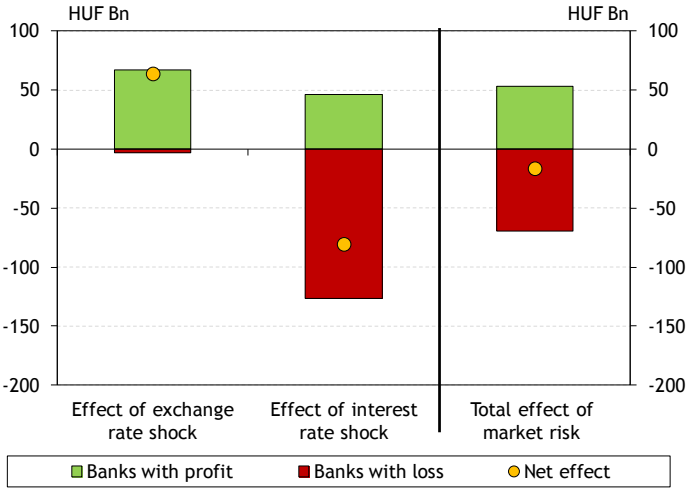
Source: MNB.

Table 8: Impact of main risks on the profit of the banking sector in the stress test, over a two-year time horizon

	Main components of losses of banking system in eight quarter horizon (HUF	
	Baseline scenario	Stress scenario
Loan losses on corporate and household portfolio	**555**	**971**
Loan losses on new non-performing corporate loans	280	411
Loan losses on new non-performing household loans	275	425
Additional loan losses on the already non-performing loans		135
Loan losses on local government portfolio	11	24
Exchange rate risk of open position		-64
Interest rate risk		80
Bank levy	205	205
Interest cost of the exchange rate cap scheme	36	65

Source: MNB.

Chart 75: Market risk stress test impacts



Source: MNB.

entire bank levy for 2013 and half of it for 2014. We assumed that tax on financial transaction will be entirely passed on clients.

Due to the credit portfolio deterioration, significant loan loss provisioning is expected in the stress scenario. Loan losses may stem from two sources: the provisioning of newly defaulted loans and additional provisioning on outstanding non-performing portfolio. In the case of corporate loans, the stress scenario includes a higher ratio of loan loss to total corporate loans than in 2009–2010, the years with the most severe downturn (Chart 73). However, the losses are lower than in 2011, a year which was considered to be an outlier. In the household portfolio, the programmes for foreign currency borrowers may mitigate deterioration in the coming period. Based on our expectations, 70 per cent of the performing foreign currency mortgage loan debtors may enter the exchange rate cap scheme, thus in their case the eliminated exchange rate risk needs to be taken into account over the forecast horizon. Accordingly, the probability of default (PD) and expected losses decline considerably in their case (Chart 74).

In addition to corporate and household loans, expected losses on municipal exposures were taken into account as well. The loan loss provisioning requirement of local governments' exposures was quantified this time as well, as following the initial grace periods, the first principal repayments of a considerable portion of bonds will become due within our forecast period. Losses on loans and bonds were calculated on the basis of expert judgements (Table 8).

In the stress scenario, a rise in the government securities yields would have a significant negative effect on profitability. In the market risk stress test, we look at the impact of interest and exchange rate shocks through the immediate revaluation of market exposures. In the case of the interest and exchange rate shocks as well, the average difference between the baseline and stress scenarios was used as the size of the shock. The resulting profit impact was evenly distributed over the two-year horizon. A 300 basis point parallel upward shift of the yield curve results in a more than HUF 100 billion in losses at the banking sector level, mainly due to the revaluation of the government securities portfolio (Chart 75). In the stress scenario, the exchange rate depreciates by 15 per cent, which ceteris paribus (disregarding higher loan losses due to portfolio deterioration) boosts the

Table 9: Stress test result with the 8 per cent regulatory capital adequacy ratio

	Baseline scenario		Stress scenario	
	End of first year	End of second year	End of first year	End of second year
Capital need of banks (HUF Bn)	0	0	0	28
Capital buffer of banks above 8 percent CAR (HUF Bn)	1,443	1,766	1,028	1,007
Total capital buffer (HUF Bn)	**1,443**	**1,766**	**1,028**	**979**

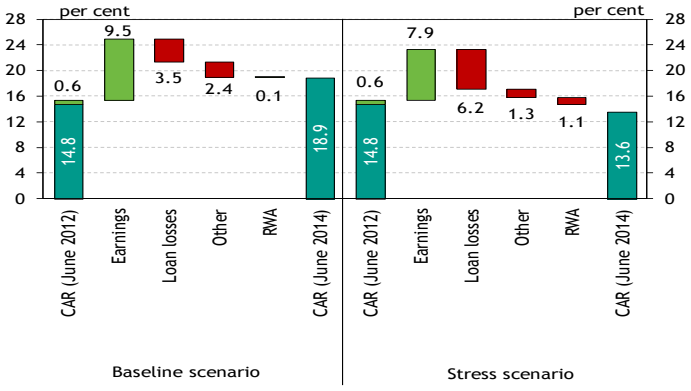
Source: MNB.

Table 10: Stress test result with 9 per cent expected capital adequacy ratio

	Baseline scenario		Stress scenario	
	End of first year	End of second year	End of first year	End of second year
Capital need of banks (HUF Bn)	0	0	0	84
Capital buffer of banks above 9 percent CAR (HUF Bn)	1,281	1,604	854	888
Total capital buffer (HUF Bn)	**1,281**	**1,604**	**854**	**804**

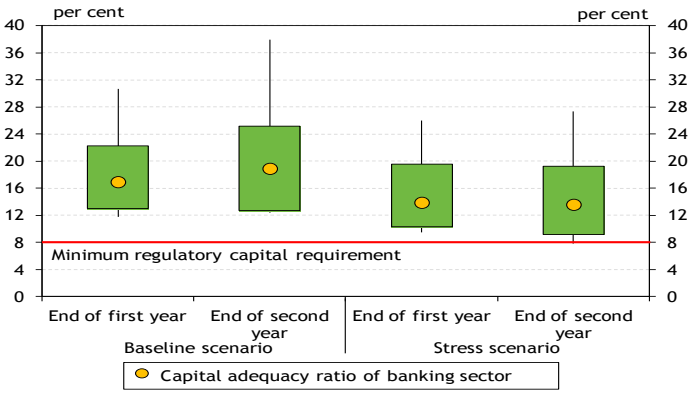
Source: MNB.

Chart 76: Factors influencing the capital adequacy ratio



Note: Red columns reduce, green columns add to the value of the CAR. In the initial CAR we respect the major capital injections declared after June 2012.
Source: MNB.

Chart 77: Distribution of the capital adequacy ratio based on number of banks



Note: Vertical line: 10-90 per cent range, rectangle: 25-75 per cent range.
Source: MNB.

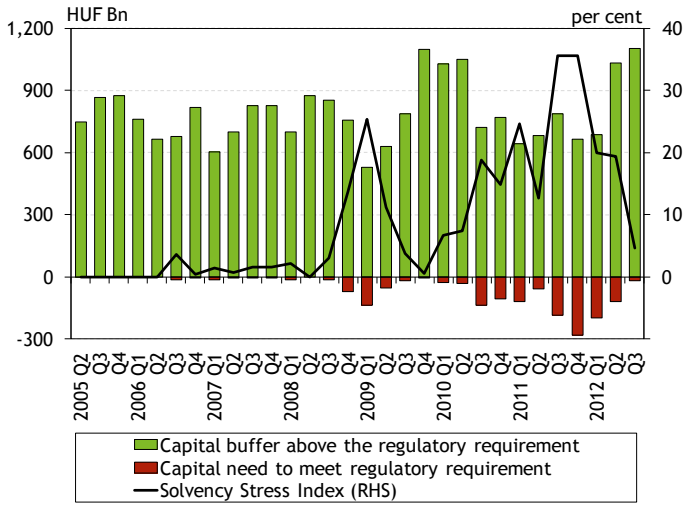
profits of banks with foreign exchange surpluses, i.e. the majority of the banking sector, by approximately HUF 67 billion, and reduces the profits of banks with forint surpluses by HUF 3 billion in aggregate through the total open FX position.

In the baseline scenario, as a result of massive capital injections by parent banks in 2011-2012 and steady deleveraging, every bank can meet the regulatory minimum level of 8 per cent (Table 9)**.** At end-2011 and early this year, several domestic banks received capital injections from their parent banks to absorb the losses stemming from the deteriorating economic environment and the early repayment scheme. This fresh capital allowed banks to weather the losses in 2011 with adequate capital levels and to be able to absorb further losses. The capital position was further improved by a contraction in domestic banks' loans outstanding. Looking ahead, an already announced but not yet implemented capital injection and expected decline in loan losses at banking system level will improve the capital position.

The resilience of banks' capital position improved, and similarly to the previous stress test in April only a manageable amount of capital injection may be required in the stress scenario. The better capital position is also reflected in the results of the stress scenario. In the first year of the stress period, the banking sector would not need any capital injection to reach the regulatory minimum level; moreover, every bank would even meet the 9 per cent level (Table 10). As a result of a persistent stress, by mid-2014 banks would already need a capital injection, but the HUF 28 billion capital requirement for reaching the 8 per cent minimum CAR can still be considered low.

Although aggregate capital adequacy is adequate, it conceals significant asymmetry. The capital adequacy ratio of the banking sector is robust, at nearly 19 per cent by the end of the two years in the baseline scenario (assuming no dividend payment), and exceeding 14 per cent even in the stress scenario (Chart 76). However, this seemingly favourable indicator conceals strong asymmetry: the capital adequacy ratios of individual institutions are dispersed in a wide range by the end of the two-year stress period. Furthermore, poor performers include one major institution as well (Chart 77).

Chart 78: Solvency Stress Index, and banks' liquidity surplus or deficit relative to the regulatory level in the stress scenario



Note: The indicator is the sum of normalised capital shortages relative to the 8 per cent level, weighted by the capital requirement. The higher the value of the index, the higher the solvency risk in the stress scenario.
Source: MNB.

The Solvency Stress Index, which provides comparability of stress tests over time, declined markedly. Using a single methodology, we prepared our stress test by quarters retroactively to 2005, which revealed changes in the resilience of the banking sector in terms of capital position. The index reached its peak in 2011 H2 due to the expected losses on the early repayment scheme. However, by end-June 2012 it sank to 6.7 per cent, i.e. below the average level observed during the crisis (Chart 78). In parallel, capital needs also show a declining trend, i.e. the shock-absorbing capacity of the banking sector improved in the past half year. The capital buffer also changed in a positive direction, and its current level is one of the highest experienced during the crisis. This also means that not only the capital position of the banking sector strengthened in terms of financial stability, but its lending capacity also improved. Nevertheless, given the low willingness to lend, no rapid upturn is expected in lending.

METHODOLOGICAL DESCRIPTION OF MAIN FINANCIAL STABILITY INDICES

The current state of financial stability is evaluated using four main financial stability indices. These indices describe a given state; therefore, in terms of future risks to financial stability they do not always provide information. Accordingly, financial stability risks continue to be assessed in a qualitative manner. The index family may be divided into two parts: indices that measure procyclicality (FCI) and indices that measure shock-absorbing capacity (SWFSI, LSI, ESI). The first heat diagram, which indicates the degree of procyclicality, is calculated on the basis of the value of the FCI, whereas the second heat diagram, which indicates the degree of shock-absorbing capacity, is prepared on the basis of the worst of the levels indicated by the three indices.

The Financial Conditions Index (FCI)

In addition to short-term interest rates and the nominal exchange rate, which represent the behaviour of money markets, the FCI condenses the information contained in other price, quantitative and qualitative variables characterising the financial intermediary system into one indicator variable. The weights of the variables that determine the FCI are derived from a VAR (vector autoregressive) model based on the Bayesian structural VAR model developed by Tamási and Világi (2010),[38] as the related forecasting Bayesian VAR model family has become an integral part of the MNB's analytical portfolio by now. Therefore, it was expedient to prepare an FCI consistent with this tested system.

Goodhart and Hoffman (2001) provide a good summary of the VAR-based approach.[39] In order to understand the method, first let us assume that in terms of developments in GDP the behaviour of the financial intermediary sector is completely exogenous, i.e. the real economy has no feedback into the financial sector. Then, if the effect of financial variables on real GDP were estimated using a simple regression, simply the resulting regression coefficients would provide the weights for the FCI. However, the financial system and the real economy have simultaneous impacts on one another, so simple regression is not an adequate tool. VAR models are suitable for the analysis of simultaneous systems.

The VAR model also allows for the calculation of how unexpected changes in (exogenous shocks to) individual financial variables affect GDP. The advantage of the method is that it is possible to exclude the endogenous reaction of financial variables on developments in economic activity, i.e. a real cause and effect relationship can be identified. As the estimated coefficients of VAR equations do not contain sufficient information as to what the economic content of the observed error terms (shocks) is, it is also necessary to use the estimated covariance matrix of the error terms to be able to interpret the shocks in an economic sense. However, even the covariance matrix does not contain sufficient information *for the identification of economically sensible (structural) shocks*, which requires various *additional assumptions*. Depending on the assumptions, there are various approaches to the identification of shocks.

Goodhart and Hoffman (2001) identify the shocks on the basis of the Cholesky decomposition of the covariance matrix. The disadvantage of this method is that the results are not invariant to arranging the variables in a row. Therefore, we use the approach applied by Guichard and Turner (2008), which is based on the *generalised impulse response* concept of Pesaran and Shin (1997).[40]

We estimated the model on a sample between 2001 Q1 and 2011 Q3. We used the following variables for estimating the VAR model: the three-month interbank interest rate (BUBOR); the nominal effective exchange rate; the consumer price index; real GDP; total corporate and consumer loans (including home equity loans); bank interest margin on corporate and consumer loans.

The FCI gauges the impact of the financial sector on the real economy. Namely, the annual growth rate of the FCI shows the contribution of the financial intermediary sector (banking system) to the annual real GDP growth rate. Based on the FCI, the cyclical position of the banking system can also be read (Table). If the output gap is

[38] Tamási, B. and Világi, B., 2010, Identification of Credit Supply Shocks in a Bayesian SVAR Model of the Hungarian Economy, MNB Working Papers 2011/7.
[39] Goodhart and Hoffman, 2010, Asset Price, Financial Conditions and the Transmission of Monetary Policy, London School of Economics.
[40] Guichard and Turner, 2008, Quantifying the effect of financial conditions on US activity, OECD WP 2008/43. Pesharan and Shin, 1997, Generalized Impulse Response Analysis in Linear Multivariate Models, *Economics Letters*, 58 (January), 17–29.

in a negative/positive and the FCI also shows a negative/positive value, the banking system is procyclical. If the banking system continues to make the output gap worse, its behaviour is contractionary. Procyclicality is considered harmful, as in this case the financial system amplifies the economic cycle; it either overheats economic growth in one direction or deepens recession in the other direction. The banking system is countercyclical if the output gap is negative/positive, while the FCI is positive/negative. All this can be considered a favourable process as it stabilises economic growth and closes the output gap. If the banking system is countercyclical to any extent, the level indicated in the heat diagram shows the minimum. The whole scope of the heat diagram gauges the degree of procyclicality.

Assessment of the procyclicality of the banking system with the different signs of the real economy cycle and the Financial Conditions Index

	positive output gap	negative output gap
positive FCI	procyclical (expansionary)	countercyclical
negative FCI	countercyclical	procyclical (contractionary)

The size of procyclicality is measured with the help of a historical comparison. In 2007, the excessive credit supply of the banking sector also contributed to the surge in foreign currency denominated mortgage loans to households and project loans to companies. This period is used as reference. Accordingly, in the first step, if the sign of the FCI is identical with that of the output gap, the banking system is procyclical. Its degree, in turn, depends on the relationship between the current absolute value of the FCI and the value of the FCI in 2007. If the former reaches or exceeds the 2007 level, it is depicted in the 'heat diagram' as maximum risk (red zone).

System-wide Financial Stress Index (SWFSI)

The SWFSI measures the real-time joint stress level of the most important segments of the Hungarian financial system, i.e. the spot FX market, the FX swap market, the secondary market of government bonds, the unsecured interbank forint market, the capital market and the banking segment.[41] However, in addition to allowing for the measurement of stress at the level of the entire financial system, it also makes is possible to quantify the extent to which the individual segments contribute to system-wide stress developments (i.e. those segments which drive system-wide stress can be identified). The value of the SWFSI changes between 0 and 1. In terms of financial stability, a stress level above 0.55 is considered a danger zone. Based on past experiences, at that level financial markets have shown considerable tensions, and the MNB also intervened to avert a more severe turmoil. SWFSI values of 0.55 or above means a major risk in terms of the financial system's shock-absorbing capacity, which corresponds to the uppermost domain in the 'heat diagram'.

The Hungarian SWFSI is calculated in three steps. The first step is the selection of the so-called 'raw' input variables or risk factors for each segment (which of the potentially eligible price and non-price financial variables capturing distinct aspects of financial stress are included in the segment-specific stress indices). The second step in calculating the system-wide financial stress indicator is to bring the individual raw risk factors into a common scale by means of appropriate transformation; the arithmetic averages over the transformed input variables in each segment constitute the six indices of segment-specific stress. Finally, the segment stress indicators are aggregated into a system-wide financial stress index guided by standard portfolio theory.

A System-wide Financial Stress Index has to comply with two main requirements. First, it is required from a financial stress index to be able to identify stress events with systemic risk importance, i.e. events whose emergence have an adverse impact on the entire financial system and on the real economy. If the systemic nature of stress is ignored during the aggregation of segment stress indices into a system-wide indicator, it can result in higher indicated stress levels in less turbulent periods. The second factor which can affect the level of system-wide stress and needs to be taken into account during calculation of the system-wide stress indicator is the relative real economic importance (weight) of each segment. Obviously, if the stress level of a relatively more important financial system segment increases, the stress level of the financial system as a whole increases to a greater extent compared to the case when the stress level of a relatively less important segment increases to the same extent,

[41] Holló, D. (2012), 'A System-wide Financial Stress Indicator for the Hungarian Financial System', MNB Occasional Papers 105.

The Hungarian System-wide Financial Stress Index is designed to capture tow aspects of systemic risk, i.e. that financial instability is widespread and costly for an economy. The first aspect is captured by weighting based on the time-varying cross-correlations among the segment stress indices, with a simple application of standard portfolio theory (i.e. segment stress indicators are aggregated in the same way as individual asset risks are aggregated into a measure of overall portfolio risk). The second element of the aggregation scheme characterising systemic risk is that portfolio weights are attached to each of the six segment stress indices on the basis of their average relative impact on industrial production ("real-impact weights") by using simple bivariate macro models.

The underlying supposition of this aggregation scheme is based on an empirically observable phenomenon, namely that during periods characterised by significant financial turbulence, risks in financial markets strongly co-move and opportunities for risk diversification narrows. This can generate further increase in risks and thus a rise in the financial system's stress level, which could also lead to the collapse of the financial system. Strong positive co-movement of financial market risks and the persistence of these processes may indicate the presence of financial stress with systemic risk importance. If the intensity of the financial market turbulence is not significant, the segment-specific stress indices do not move in conjunction strongly and permanently, and hence the turbulence-triggering event is not likely to be a stress episode with inherent systemic risk.

The Liquidity Stress Index (LSI)

The liquidity stress test calculation is based on a cash-flow statement reported by banks on a daily basis. The cash-flow statement is prepared with treasury method, meaning that it shows *ceteris paribus* the outgoing and incoming items of the bank treasury in forint and foreign exchange for thirty days following the reporting day (also including cash flows[42] of maturing assets and liabilities as well as off-balance-sheet items). The balance of incoming and outgoing items is the 30-day treasury financing gap. The data provision includes the free liquidity reserve of the given day, which is the nostro account holding, the collateral value of eligible securities freely disposable at the end of the 30-day period and the sum of the deviation from the reserve requirement of the given month. The sum of the treasury financing gap and the liquidity reserve is the bank's liquidity surplus on the given day, which can be an indicator of the short-term liquidity shock-absorbing capacity. Of course, the liquidity position can be calculated for a longer than 30-day period as well, which may even lead to higher liquidity needs due to maturing foreign funds and swaps. However, over a longer period banks are already capable of adjustments, and thus the methodology described here does not provide a good estimate for liquidity risks over longer horizons.

During our liquidity stress test, we always set out from the given day's 30-day forward looking liquidity surplus. In the selection of stress events, we took into account both the peculiarities of the domestic banking sector and the domestic and international crisis experiences of the past period. We examine the effects of five various shock events. The shock events can be classified into three types of risks: 1) market risk; 2) reputational risk; 3) counterparty risk. Using the data of the seven largest banks, we determined the size of household and corporate deposit withdrawals applying so-called value-at-risk based (VaR) estimates and the size of the price losses on eligible securities on the basis of market data. Domestic and international crisis experiences were taken as a basis for the degrees of other stresses.

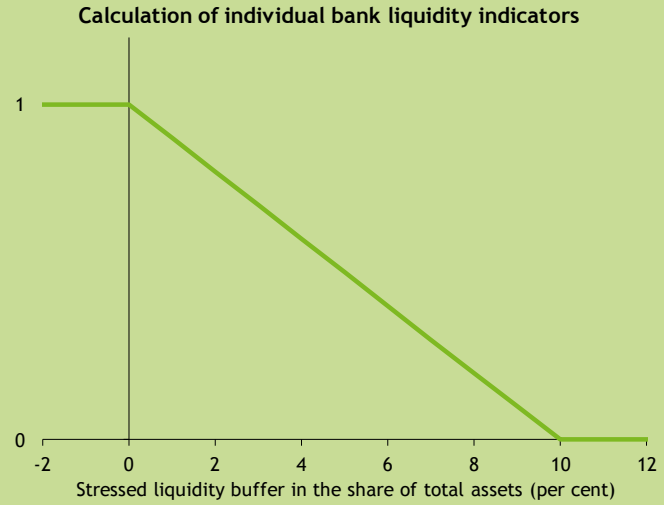
Degrees of stress applied in the liquidity stress test

Assets			Liabilities		
Item	Degree (per cent)	Currencies affected	Item	Degree (per cent)	Currencies affected
Default on interbank assets	20	HUF	Withdrawals in household deposits	10	HUF/FX
Exchange rate shock on swaps	15	FX	Withdrawals in corporate deposits	15	HUF/FX
Depreciation of assets eligible at the central bank	10	HUF			

Note: The forward-looking treasury gap assumes no active treasury management on the part of the bank; hence it does not take into account rollovers of maturing interbank and foreign funds

[42] The treasury gap calculation assumes that maturing interbank and foreign funds will not be renewed at all.

The stressed liquidity surplus is calculated for each bank (due to the data availability for all banks since March 2012, prior to that for the seven largest banks). Then an indicator between 0–1 is assigned to each bank, depending on the after-stress liquidity surplus as a percentage of the balance sheet total. In case liquidity amounts to 10 per cent as a percentage of total assets, as required by the regulatory authority, or higher, the given bank receives a value of 0. In the case of negative liquidity buffer, i.e. below 0 per cent, the bank receives a value of 1. The indicator is calculated linearly between the two thresholds.



The individual indicators are weighted by banks' market shares by total assets, then the indicators are added up to receive the value of the LSI. In case the level of the index is 30 per cent or higher, liquidity risk is considered critical.

For example, a 30 per cent level of the LSI means that a bank that has a 30 per cent market share is illiquid and all the others meet the regulatory minimum, or it can also mean that each bank is 3 percentage points below the 10 per cent balance sheet coverage indicator in the stress scenario.

The Solvency Stress Index (SSI)

The macro scenarios of our credit risk stress tests were prepared taking into account the prevailing judgement using the prevailing forecasting model. With the change in risk perception, the difference between the baseline and stress scenarios also changed from time to time. In addition, within a year the time horizons of the autumn and spring stress tests were also different. Accordingly, at most we could provide a qualitative assessment of the *change* in the shock-absorbing capacity of the banking system; the comparability of the findings presented in the *Reports on Financial Stability* was limited.

For the sake of historical comparability, we prepared a so-called Solvency Stress Index (SSI), calculated with a uniform methodology. We prepared the stress tests retroactively to 2005 for a uniform, two-year horizon, with a constant degree of stress, applying the currently used models. Thus we may learn how the shock-absorbing capacity of the banking system has changed in recent years, and how the current state compares to the earlier periods.

As the main rule, always the forecasts of the relevant *Quarterly Reports on Inflation* were taken as the baseline scenario, considering them the most probable scenario at that time. This was usually in line with market expectations, and was not far from realisation either. However, the economic downturn suffered in the initial period of the crisis considerably exceeded earlier expectations, including those of the MNB as well. If we evaluated the shock-absorbing capacity on the basis of the pre-crisis forecasts, we would receive a much more optimistic picture than the actual one. Therefore, for this period we did not take into consideration the baseline scenario of the inflation forecast of the MNB, but a scenario as if a considerable portion (roughly two thirds) of the 2009 recession could have been foreseen. Thus the related stress scenario is nearly identical with the actual downturn.

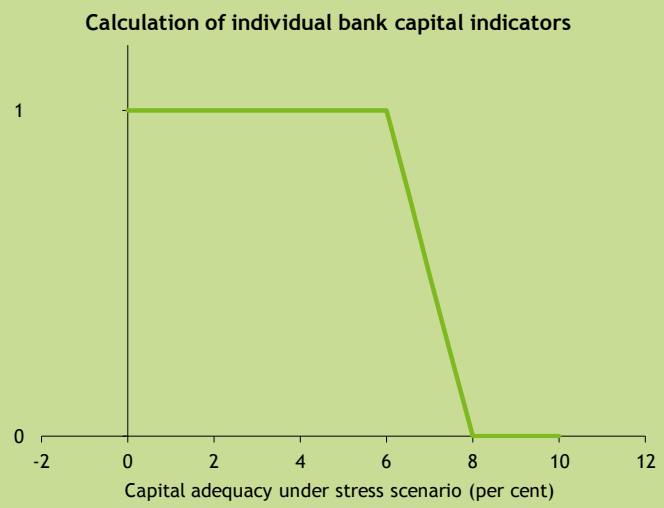
In determining the stress scenarios, we always took into account the same magnitude of difference compared to the baseline scenario. This uniform degree of stress is similar to our earlier stress tests. The stress applied to each period in a uniform manner continues to be a shock that unfavourably affects Hungary's risk premium, the exchange rate of the forint and external demand, resulting in a fall in GDP, employment and domestic demand.

The stress measures applied in the solvency stress test

Percentage point changes in GDP in 8 quarters	-4,3
Percentage point changes in employment in 8 quarters	-2,7
One-off permanent depreciation of the exchange rate of the forint (per cent)	15
One-off permanent interest rate shock (basis points)	300
Change in the prices of real estates for residential use - one-off, permanent (per cent)	-10

The comparability of the results of our earlier stress tests was also hindered by significant methodological differences across different periods. In addition to methodological developments (integration of market stress test, introduction of additional loan loss provisioning for the non-performing portfolio in the stress scenario), the time horizon is also standardised, and we have decided on eight quarterly periods. We have used our latest models for the quantification of risk parameters as well. This model application is identical to the assumption that the reason for the difference between our current and older models is not due to the change in the nexus aimed at capturing but the fact that at present we have more precise and more detailed information about it. Considering the above, we have prepared the stress tests starting from 2005, on a quarterly basis. The forecast starting in a given quarter is always based on the closing balance sheet data of the previous quarter. The shock occurring in the stress scenario always occurs at the beginning of the second quarter of the forecast horizon.

In the evaluation of the stress tests we traditionally publish many variables, but in the case of the SSI we strived to condense the information. We transformed the capital adequacy ratios by banks to the [0;1] interval in a way that the indicator of the bank is 1 if its capital adequacy ratio does not reach the 6 per cent capital adequacy (CAR) in the stress scenario, and 0 if its capital adequacy ratio reaches or exceeds 8 per cent in the stress scenario. In the range between 8 and 6 per cent the value of the bank-level indicator changes evenly, in line with the capital adequacy ratio. The upper, 8 per cent threshold value designated upon the determination of the bank-level indicator is the regulatory minimum, whereas a below 6 per cent capital adequacy already entails supervisory measures.



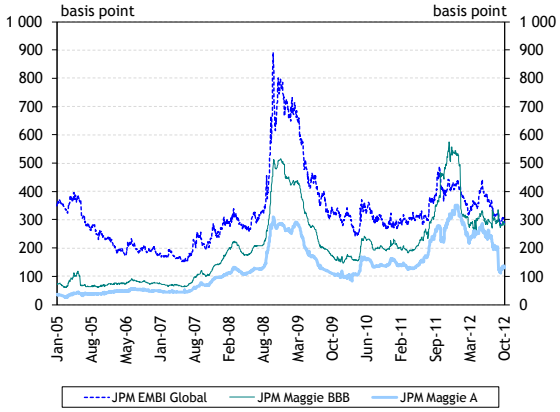
The system-level index (SSI) is a result of creating a banking system level weighted average from indicators by banks, where the weights are the regulatory capital requirement of individual banks. A 30 per cent value of the index is considered a critical level; above that there is a major risk in terms of the shock-absorbing capacity of the banking system.

The value of the banking system level index can also be 30 per cent if in the stress scenario the capital adequacy of banks that account for 30 per cent of the banking sector (in terms of capital adequacy) sinks to 6 per cent or below, while that of the remaining 70 per cent is 8 per cent or higher, or if the capital adequacy of 60 per cent of the banking sector is 7 per cent and that of the remaining 40 per cent is 8 per cent or higher. Accordingly, the SSI primarily provides direct information on the weighted distribution of capital shortage within the banking system and not on the changes in lending capacities based on capital buffers.

Appendix: Macroprudential indicators

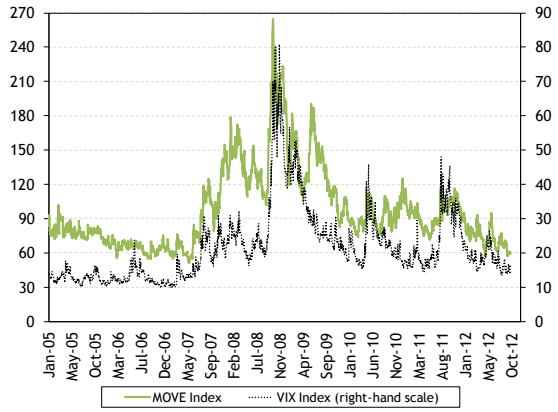
1. Risk appetite

***Chart 1**: Primary risk indicators*



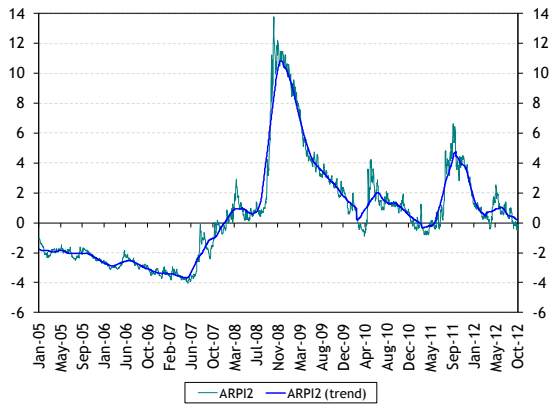
Source: Datastream, JP Morgan.

***Chart 2**: Implied volatility of the primary markets*



Source: Datastream, Bloomberg.

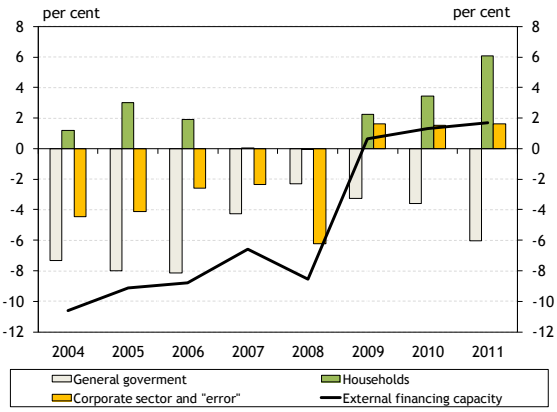
***Chart 3**: Dresdner Kleinwort indicator*



Source: DrKW.

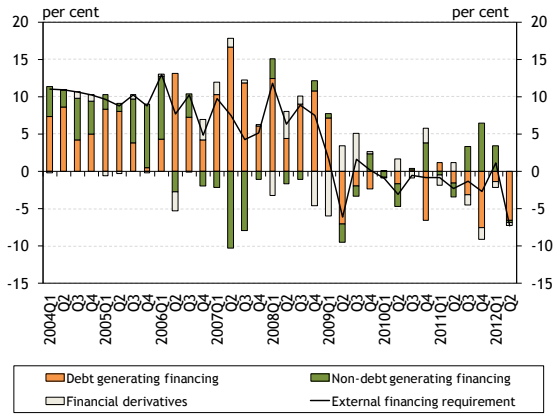
2. External balance and vulnerability

***Chart 4**: Net financing capacity of the main sectors and external equilibrium as percentage of GDP*



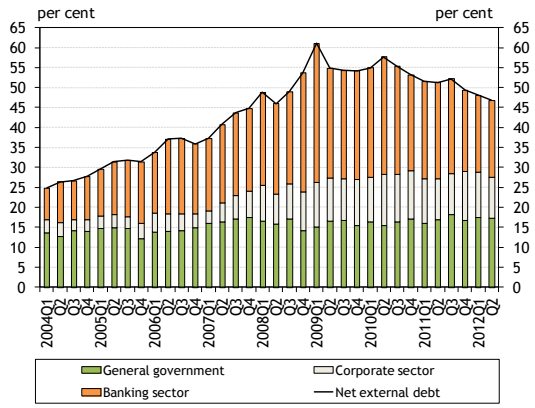
Source: MNB.

***Chart 5**: External financing requirement and its financing as percentage of GDP*



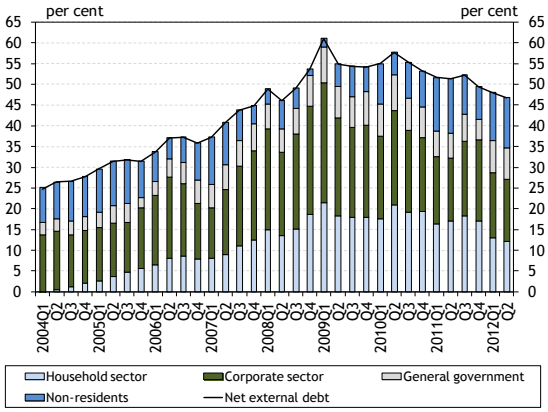
Source: MNB.

***Chart 6**: Net external debt as percentage of GDP*



Source: MNB.

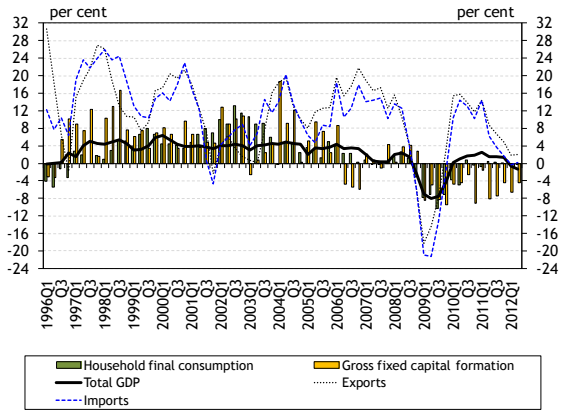
***Chart 7**: Open FX position of the main sectors as percentage of GDP*



Source: MNB.

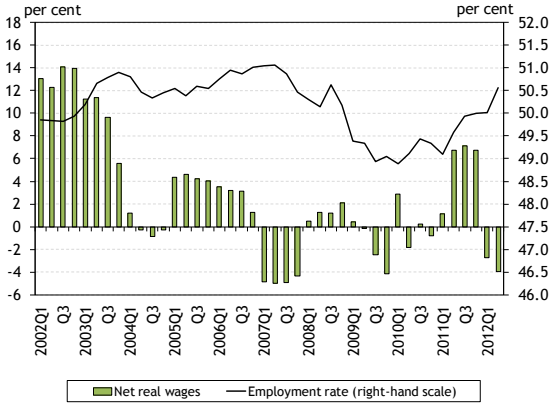
3. Macroeconomic performance

***Chart 8**: GDP growth and its main components (annual growth rate)*



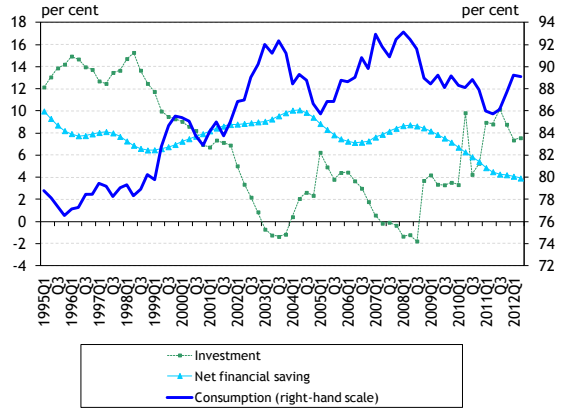
Source: KSH.

***Chart 9**: Employment rate and net wage developments (annual growth rate)*



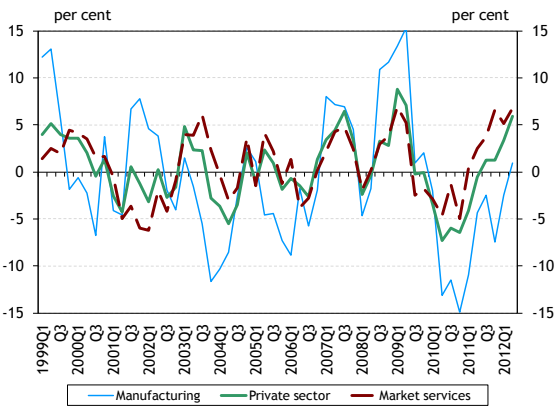
Source: KSH.

***Chart 10**: Use of household income as a ratio of disposable income*



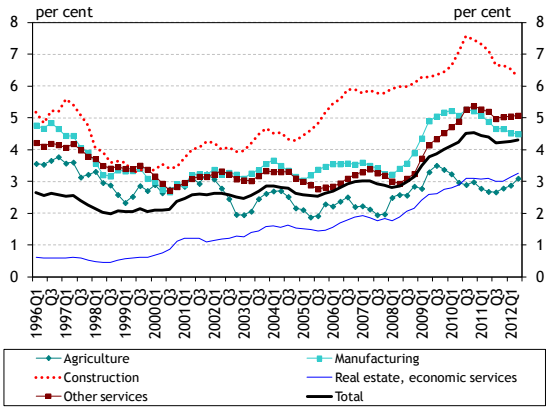
Source: KSH, MNB.

***Chart 11**: Corporate real unit labour cost in the private sector (annual growth rate)*



Source: KSH, MNB.

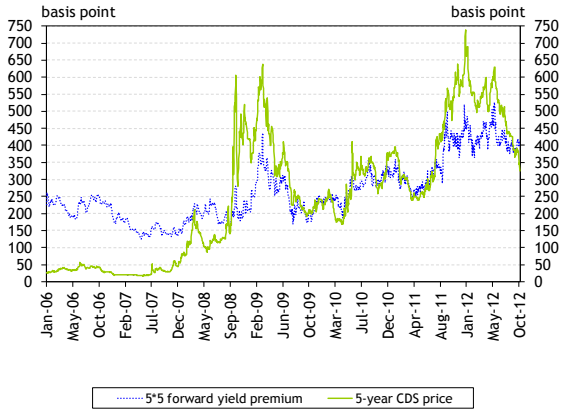
Chart 12: *Sectoral bankruptcy rates*



Source: Opten, KSH, MNB.

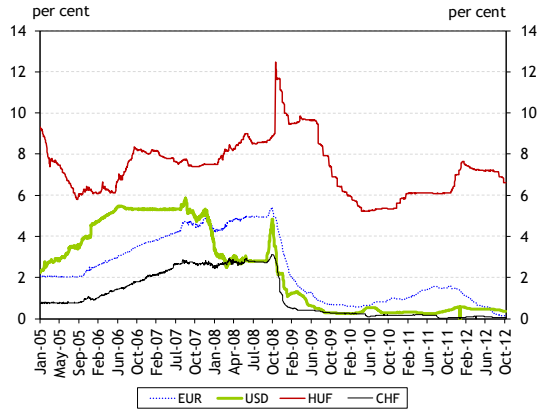
4. Monetary and financial conditions

Chart 13: *Long-term default risk and forward premium of Hungary*



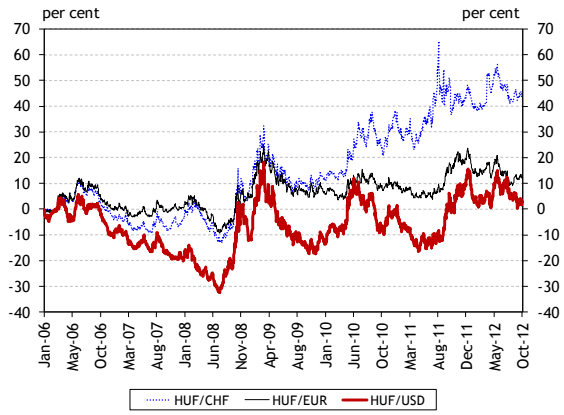
Source: Datastream, Reuters.

Chart 14: *Three-month EUR, USD, CHF and HUF money market interest rates (LIBOR and BUBOR fixing)*



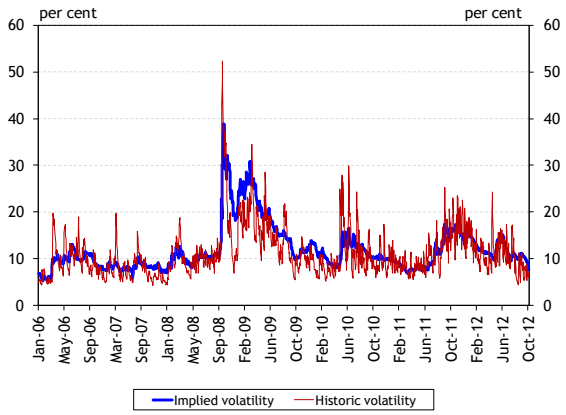
Source: Reuters.

Chart 15: *HUF/EUR, HUF/USD and HUF/CHF exchange rates compared to January 3, 2005*



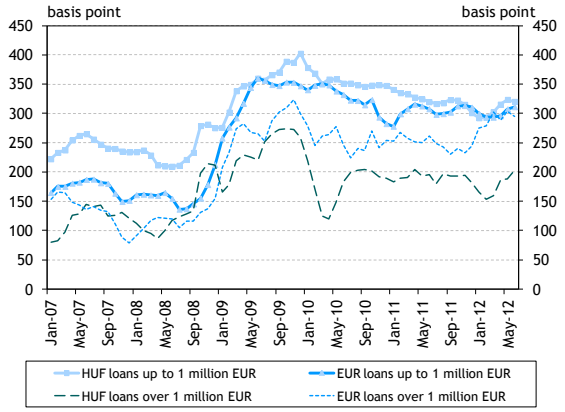
Source: Reuters.

Chart 16: *Volatility of the HUF/EUR exchange rate*



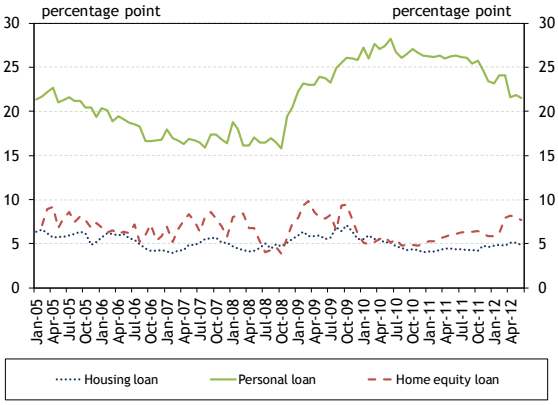
Source: Reuters, MNB.

***Chart 17**: Interest rate premium of new loans to non-financial enterprises (over 3-month BUBOR and EURIBOR, respectively, 3-month moving average)*



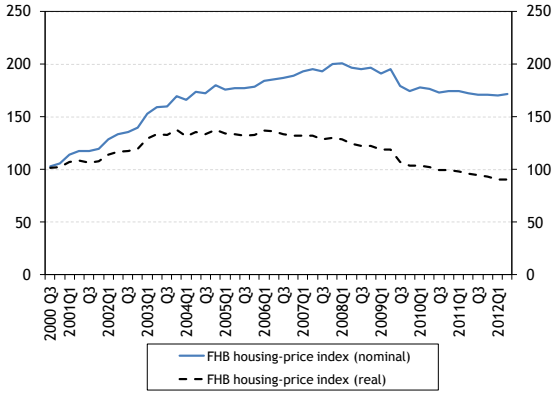
Source: MNB, Euribor.

***Chart 18**: Interest rate premium of new HUF loans to households (over 3-month BUBOR)*



Source: MNB.

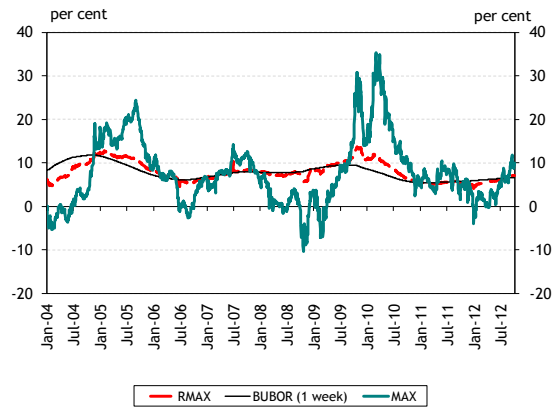
***Chart 19**: FHB housing-price index (2000=100)*



Source: FHB.

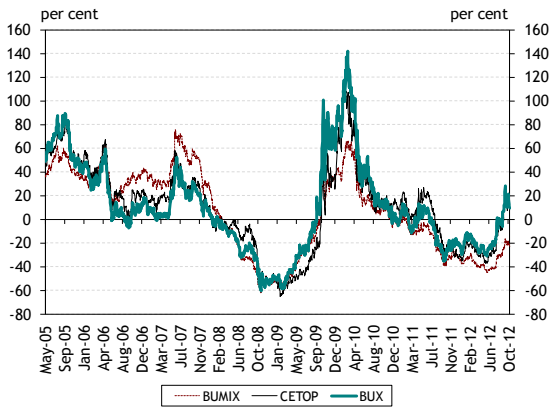
5. Prices of instruments

***Chart 20**: Annualised yields on government securities' indices and money markets*



Source: FHB.

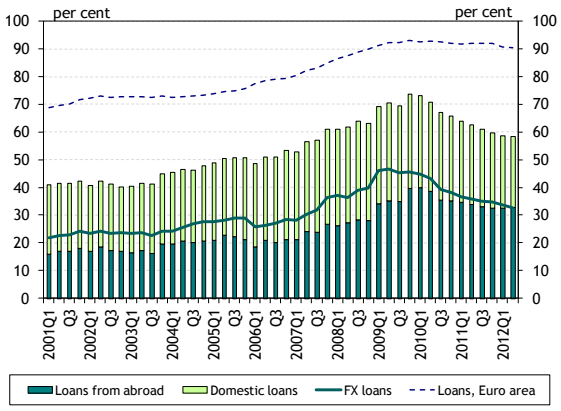
***Chart 21**: Annual yield of key Hungarian and Central and Eastern European stock market indices*



Source: ÁKK, portfolio.hu, MNB.

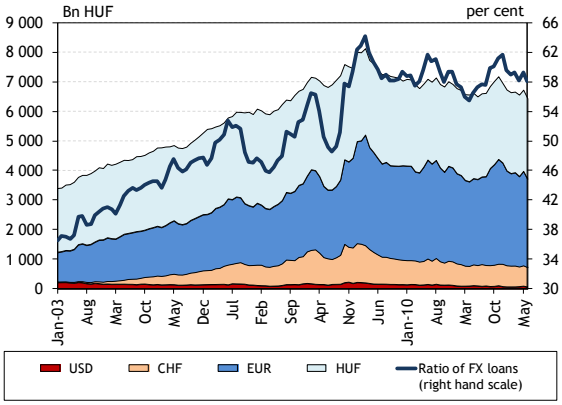
6. Risks of the financial intermediary system

***Chart 22**: Indebtedness of non-financial enterprises as a percentage of GDP*



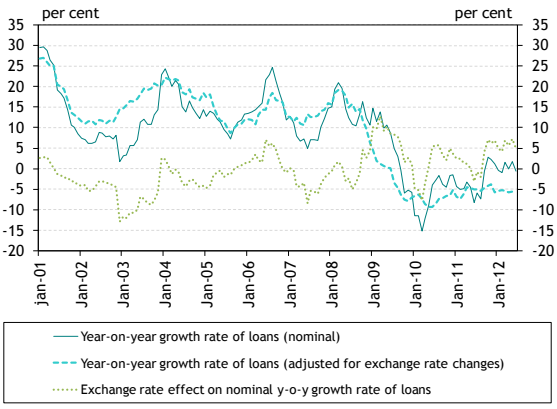
Source: Eurostat, MNB.

***Chart 23**: Denomination structure of domestic bank loans of non-financial enterprises*



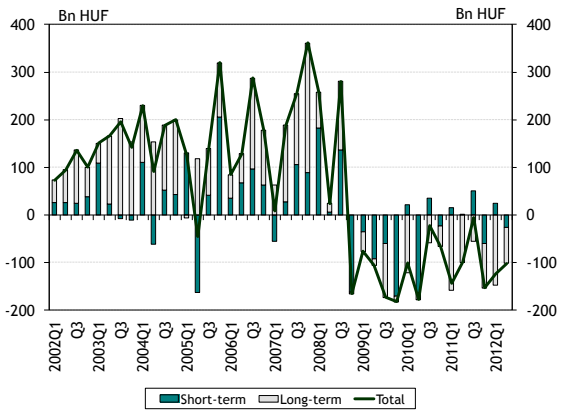
Source: MNB.

***Chart 24**: Annual growth rate of loans provided to non-financial corporations by domestic banks*



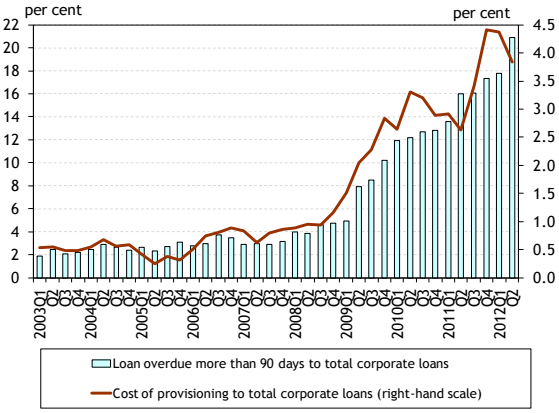
Source: MNB.

***Chart 25**: Net quarterly change of bank loan volumes of non-financial enterprises*



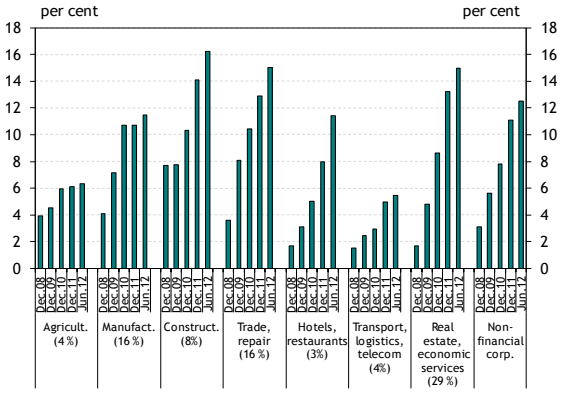
Source: MNB.

***Chart 26**: Quality of the corporate loan portfolio*



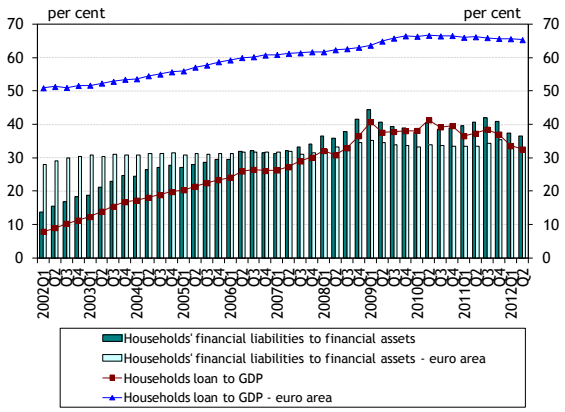
Source: MNB.

***Chart 27**: Provisioning on loans of non-financial corporations by industry*



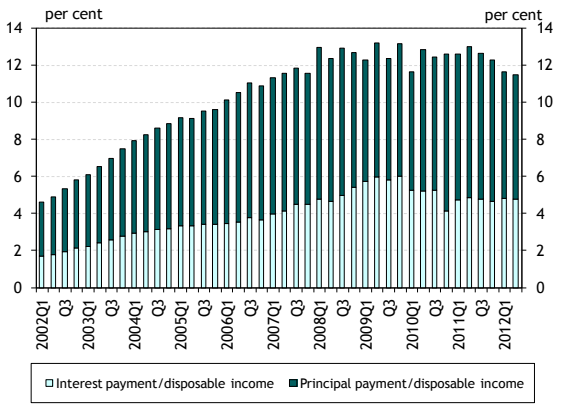
Source: MNB.

Chart 28: *Indebtedness of households in international comparison*



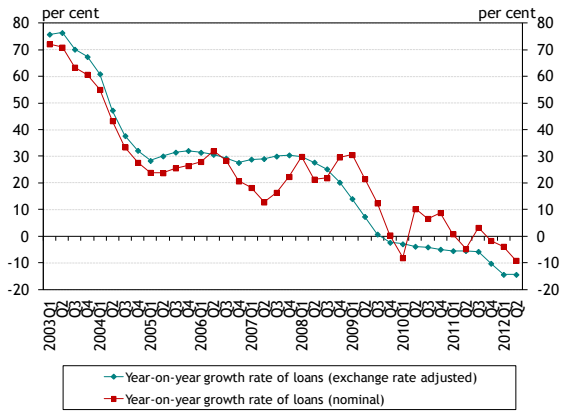
Source: ECB, MNB.

Chart 29: *Debt service burden of the household sector*



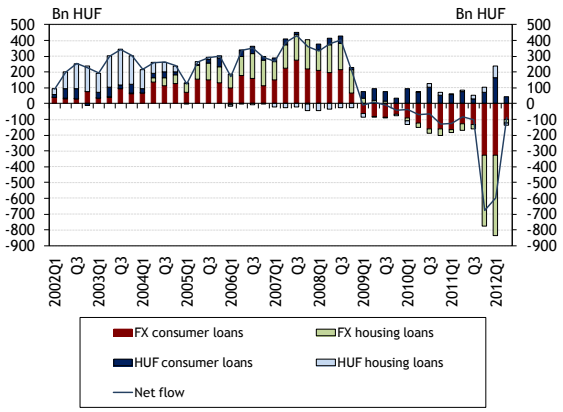
Source: MNB.

Chart 30: *Annual growth rate of total household loans*



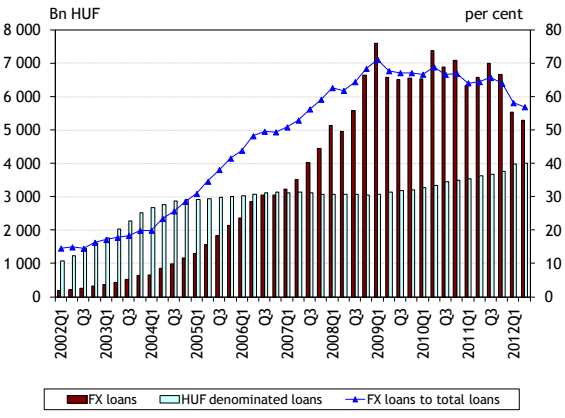
Source: MNB.

Chart 31: *Net quarterly change of bank loan volumes of households by main products and currencies, adjusted for exchange rate changes*



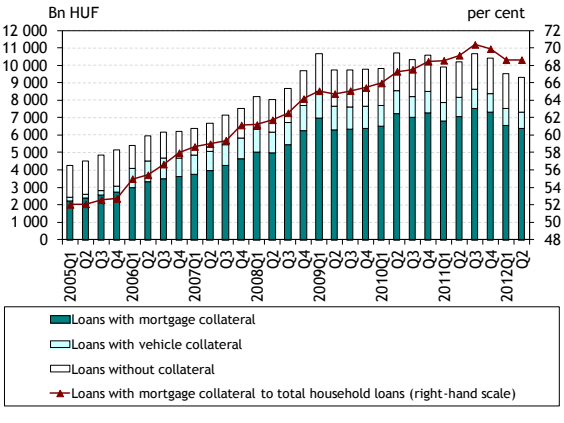
Source: MNB.

Chart 32: *Household loans distribution by denomination*



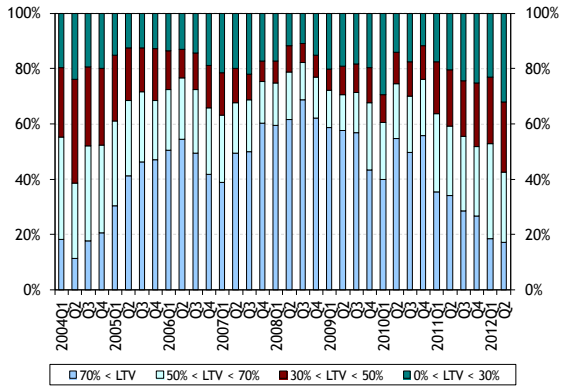
Source: MNB.

Chart 33: *Household loans distribution by collateral*



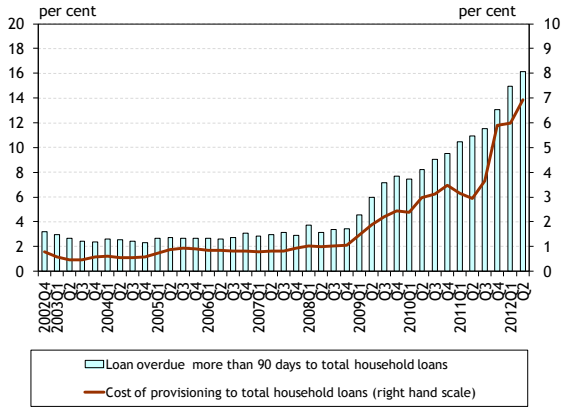
Source: MNB.

***Chart 34**: Distribution of new housing loans by LTV*



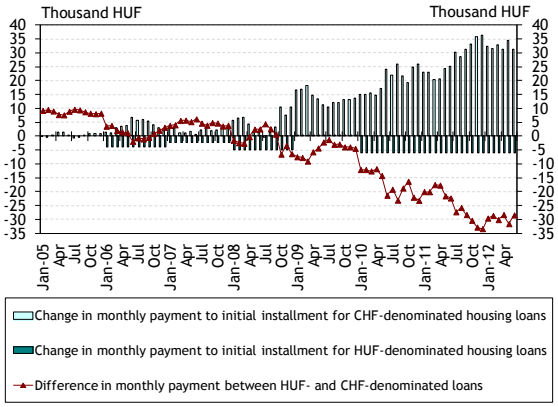
Source: MNB.

***Chart 35**: Quality of the household loan portfolio*



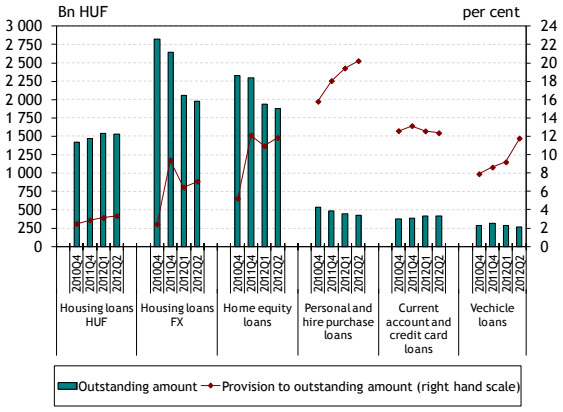
Source: MNB.

***Chart 36**: Comparison of instalment payments of CHF- and HUF- denominated housing loans*



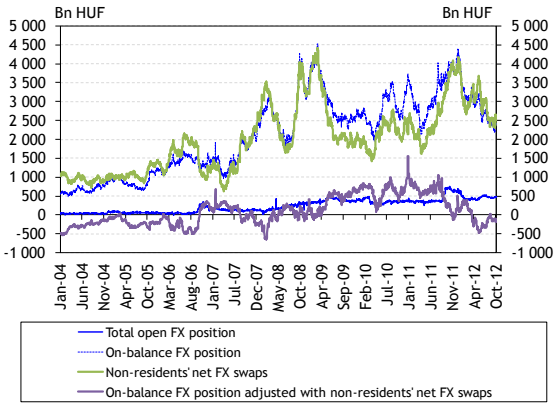
Source: MNB.

***Chart 37**: Provisioning on household loans*



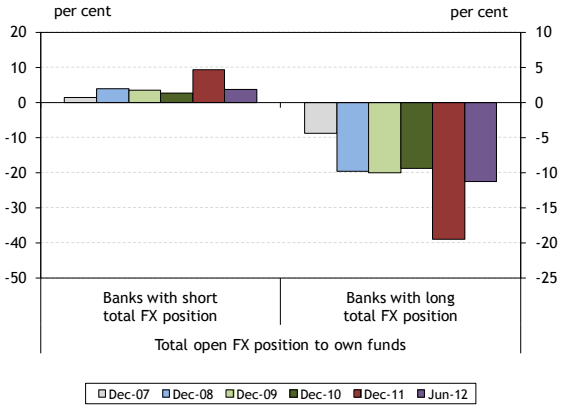
Source: MNB.

***Chart 38**: Open FX position of the domestic banking system*



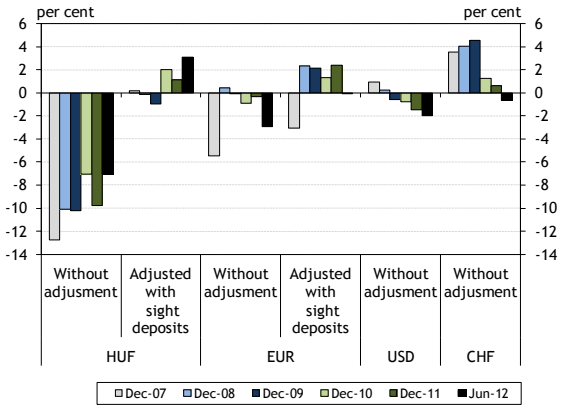
Source: MNB.

***Chart 39**: Banking sector's exchange rate exposure*



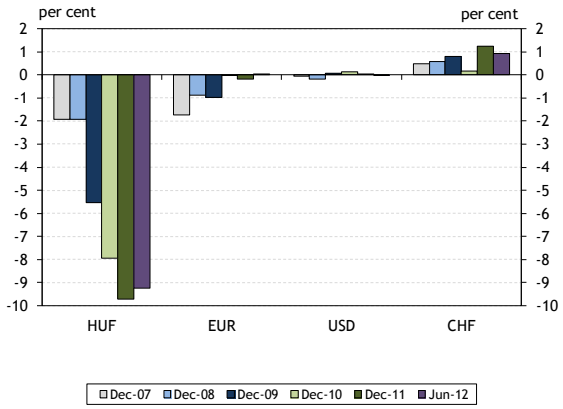
Source: MNB.

***Chart 40**: 90-day re-pricing gap of the banking sector*



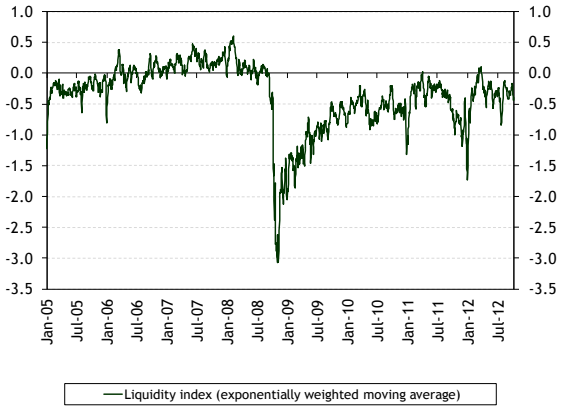
Source: MNB.

***Chart 41**: Estimated maximum loss based on interest rate risk stress tests relative to equity*



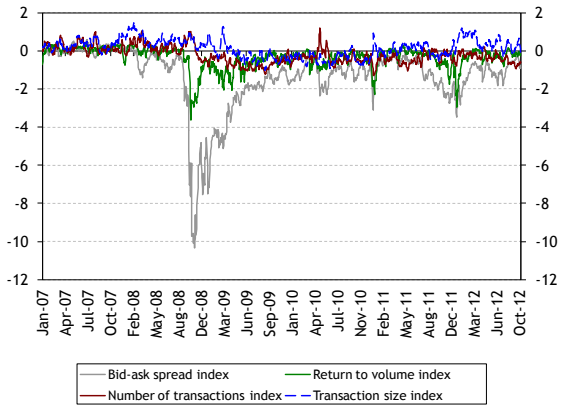
Source: MNB.

***Chart 42**: Liquidity index (exponentially weighted moving average)*



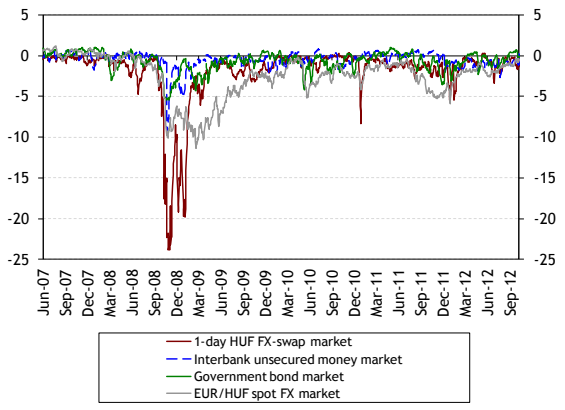
Source: MNB, Keler, Reuters, DrKW.

***Chart 43**: Liquidity sub-indices (exponentially weighted moving average)*



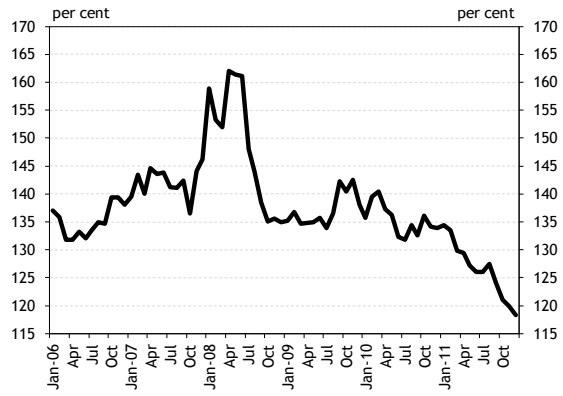
Source: MNB, Keler, Reuters, DrKW.

***Chart 44**: Bid-ask spread indices of the major domestic financial markets (exponentially weighted moving average)*



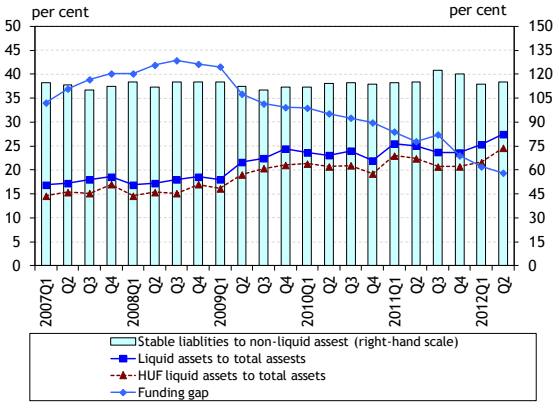
Source: MNB, Keler, Reuters, DrKW.

***Chart 45**: Credit to deposit ratio of the banking sector*



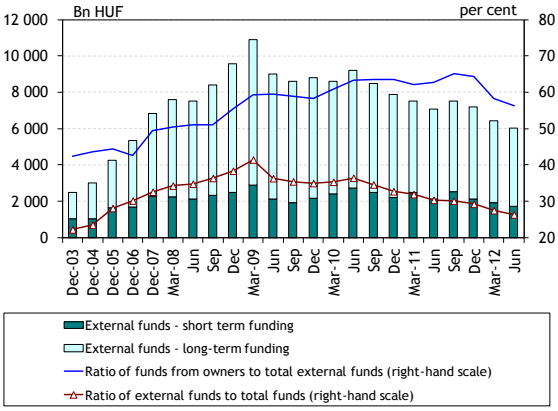
Source: MNB.

Chart 46: *Liquidity ratios of the banking sector*



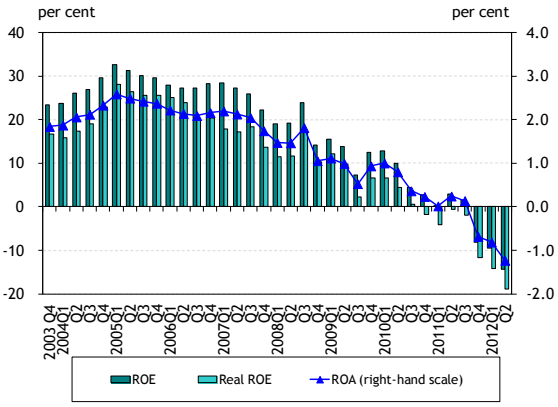
Source: MNB.

Chart 47: *External funds of the banking sector*



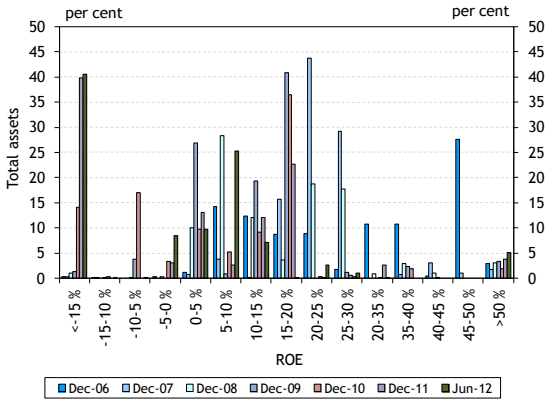
Source: MNB.

Chart 48: *ROA, ROE and real ROE of the banking sector*



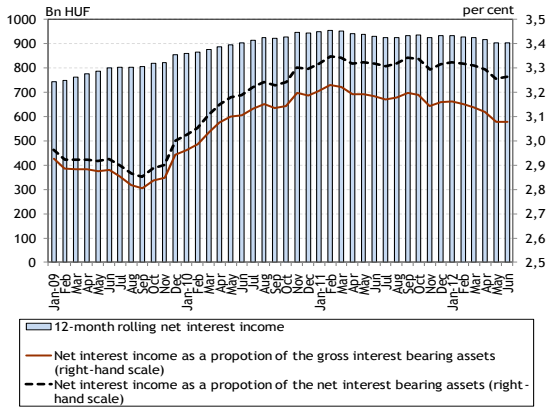
Source: MNB.

Chart 49: *Dispersion of banks' total assets by ROE*



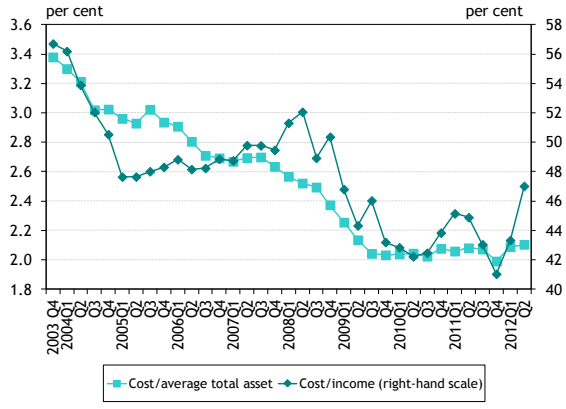
Source: MNB.

Chart 50: *Net interest income as a proportion of the gross and net interest bearing assets in the banking sector*



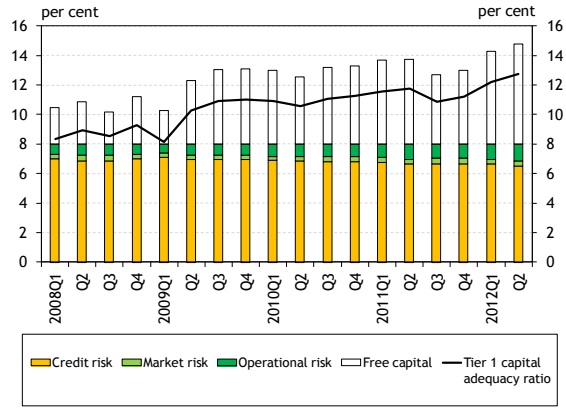
Source: MNB.

Chart 51: *Operating efficiency indicators of the banking sector*



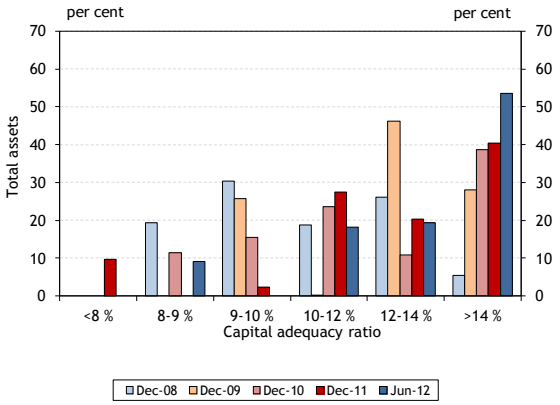
Source: MNB.

Chart 52: *Banks' capital adequacy ratios*



Source: MNB.

Chart 53: *Dispersion of banks' minimum capital requirement by capital adequacy ratio*



Source: MNB.

Notes to the appendix

The chart date (e.g. 2008) means the end of the year (the 31st of December) if it's not indicated otherwise.

Chart 1:

The increased value of the indicator indicates declining risk appetite or increasing risk aversion.

Chart 2:

VIX: implied volatility of S&P 500.

MOVE: implied volatility of US Treasuries (Merrill Lynch).

Chart 3:

The increased value of the indicator indicates declining risk appetite or increasing risk aversion.

Chart 4:

General government: according to SNA methodology.

Corporate sector and "error": the financing requirement of corporate sector is calculated as a residual, so it includes errors.

External financing requirement: adjusted by the difference caused by imports brought forward on account of EU accession and by the import increasing impact generated by customs warehouses terminated due to EU accession and Gripen acquisitions.

Chart 10:

Disposable income is estimated by MNB using the consumption, investment and financial savings data of households.

Chart 12:

Number of bankruptcy proceedings of legal entities, summed according to the date of publication, cumulated for 4 quarters, divided by the number of legal entities operating a year before.

Chart 13:

The 5-year forward forint risk premium as of 5 years from now, compared to the euro forward yield (3-day moving average) and the 5-year Hungarian credit default swap spread.

Chart 16:

Historic volatility: weighted historic volatility of the exchange rate (GARCH method).

Implied volatility: implied volatility of quoted 30-day ATM FX options.

Chart 19:

FHB House Price Index.

Chart 24:

FX loans, exchange rate as of end-December 2000, HUF loans adjusted by state loan refinancing in December 2002.

Chart 25:

FX loans on December 2000, end of month exchange rate.

Chart 38:

An increase in the swap stock stands for swaps with a long forint spot leg. Based on the daily FX reports of credit institutions. Calculated from swap transactions between credit institutions and non-resident investors. The MNB does not take responsibility for the accuracy of the data. Revisions due reporting errors and non-standard transactions can lead to significant subsequent modifications of the data series. The data series does not include swap transactions between branches, specialised credit institutions, cooperative credit institutions and non-resident investors. The swap stock is the sum of termin legs calculated at actual foreign exchange rates.

Chart 41:

The interest rate risk stress test indicates the projected result of an extreme interest rate event; in this scenario this event is a parallel upward shift of the yield curve by 500 basis points for the forint, and by 200 basis points for the euro, the US dollar, and the Swiss franc. For the calculations we applied re-pricing data and the Macaulay duration derived from them.

Chart 42:

A rise in the liquidity index indicates an improvement in the liquidity of the financial markets.

Chart 43:

Similarly to the liquidity index, increase in liquidity sub-indices suggests an improvement in the given dimension of liquidity.

Chart 44:

A rise in the indices represents narrowing bid-ask spread, thus an increase in the tightness and liquidity of the market. The liquidity index of HUF FX-swap market includes the data of USD/HUF and EUR/HUF segments, taking into account of tom-next, overnight and spot-next transactions. The earlier version of the liquidity index included only the tom-next USD/HUF transactions.

Chart 45:

Client loans include loans and bonds of non-financial institutions, household loans, loans and bonds of financial and investment enterprises, government loans, municipal loans and municipal bonds. Client deposits include the deposits of non-financial institutions, household deposits, deposits of money market funds, deposits of financial and investment enterprises, government deposits and municipal deposits. The loan-to deposit ratio is exchange-rate-adjusted with respect to the last period..

Chart 46:

Funding gap is the difference between the exchange rate adjusted customer credit and deposit, divided by the exchange rate adjusted customer credit.

Chart 48:

ROE: pre-tax profit / average (equity - balance sheet profit).

ROA: pre-tax profit / average total assets.

Interim data are annualised.

Pre-tax profit: previous 12 months.

Average total assets: mean of previous 12 months.

Average (equity - balance sheet profit/ loss): 12 month moving average.

Deflator: previous year same month=100 CPI (%).

Chart 49:

Pre-tax profit.

Chart 50:

Based on aggregated individual, non-consolidated data

Net interest income: 12-month rolling numbers, the difference of interest revenue and interest expenditure

Gross interest bearing assets: 12-month average numbers, total exposure

Net interest bearing assets: 12-month average numbers, exposure minus the provision

Chart 51:

Cost: previous 12 months

Income: previous 12 months

Average total asset: mean of previous 12 months

Chart 52:

Capital adequacy ratio (CAR) = (total own funds for solvency purposes/minimum capital requirement)*8%

Tier 1 capital adequacy ratio = (tier 1 capital after deductions/minimum capital requirement)*8%